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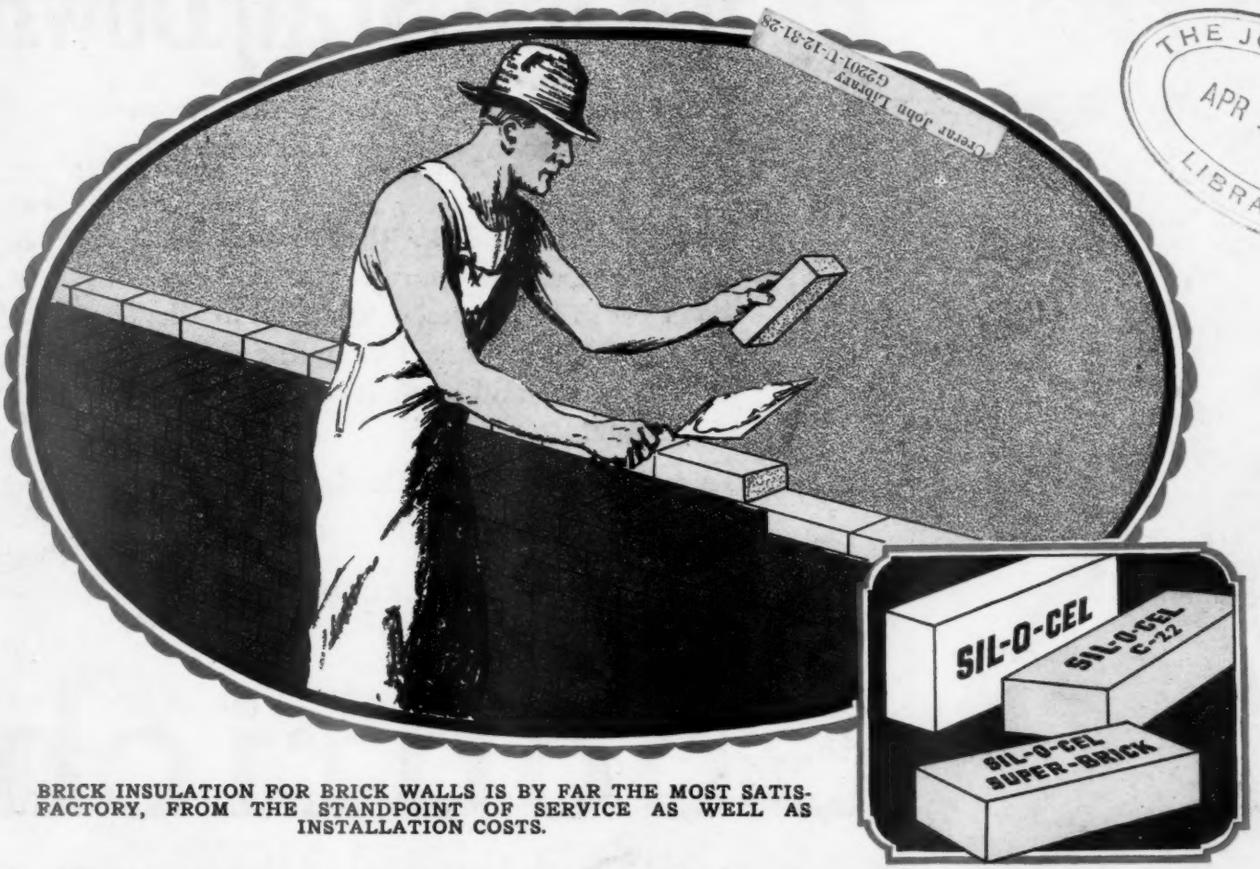

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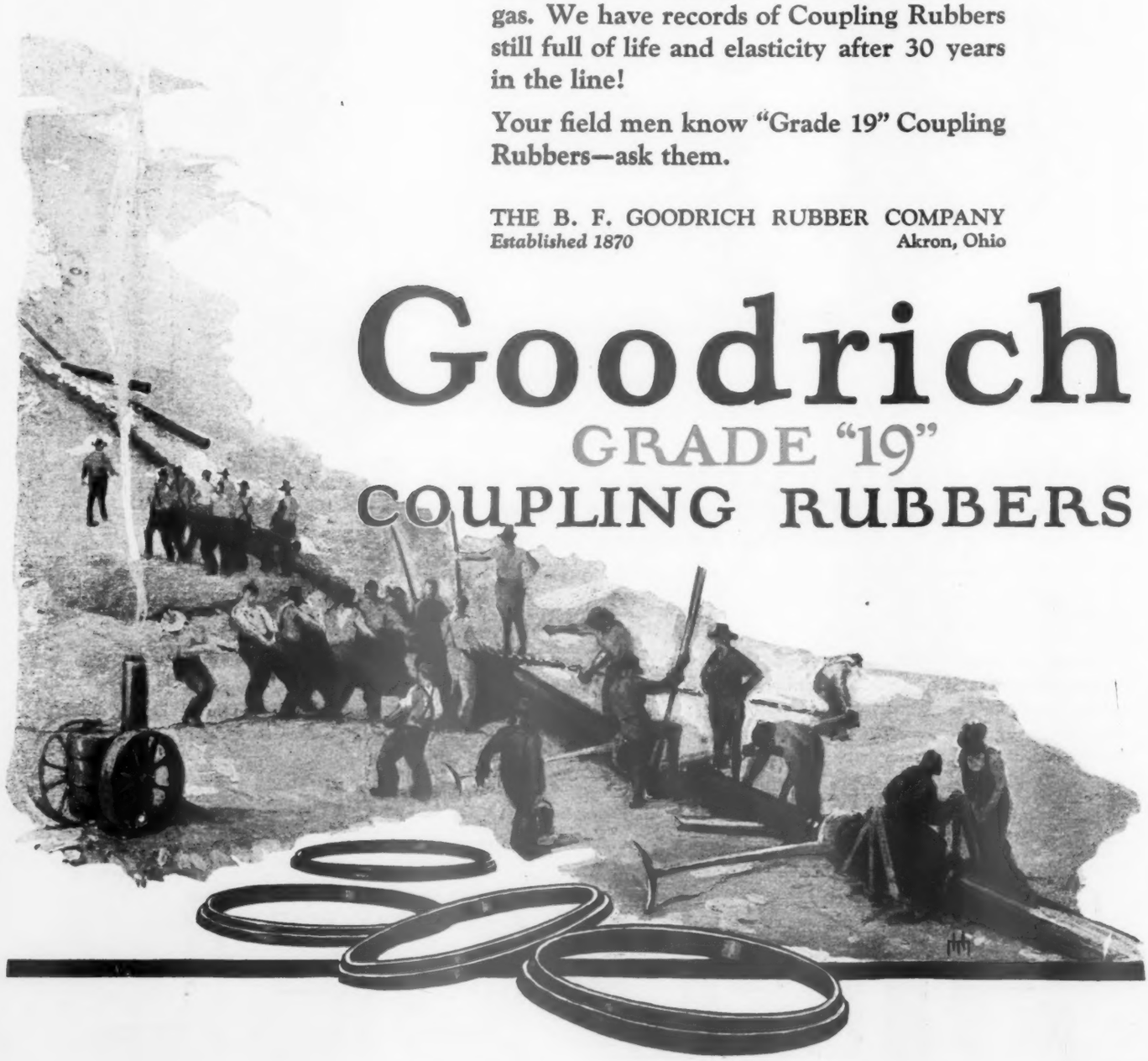

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Change in Situation Now Looked For

Highest daily average estimated total production in 1927, week ended July 30, 2,587,105 bbls. Lowest in 1927, Jan. 22, 2,360,789 bbls.

Settlement of West Texas Problem, Opening of Motoring Season and Increased Use of Autos Are Big Factors

By Andrew M. Rowley

Highest daily average estimated light oil production in 1927, week ended July 30, 2,102,385 bbls. Lowest in 1927, Jan. 1, 1,790,729 bbls.

A definite change for the better in the general petroleum situation is expected within the next two or three weeks, predicated largely upon action it is believed will be taken to prorate production in the Hendricks Pool, Winkler County, Texas, to facilities for transporting the crude to market. While any action taken will not result in any less crude from that area reaching markets, a far better feeling will prevail if West Texas operators are able to agree to a plan which will prevent a vast flood of oil there being brought to the surface until conditions warrant. Unless something unforeseen develops, it is felt the Texas Railroad Commission will make effective, probably May 1, a proration order which will limit production in the Hendricks Pool.

Efforts of the industry in the Oklahoma-Kansas division of the Mid-Continent area to exercise a closer watch over wildcat drilling will also tend to strengthen the crude oil situation. These factors, with the opening of the motoring season and the movement to stimulate gasoline consumption through a greater use of automobiles, are expected to bear fruit quickly and result in a stabilization of conditions both in the crude producing and refining branches hardly thought possible a few months ago.

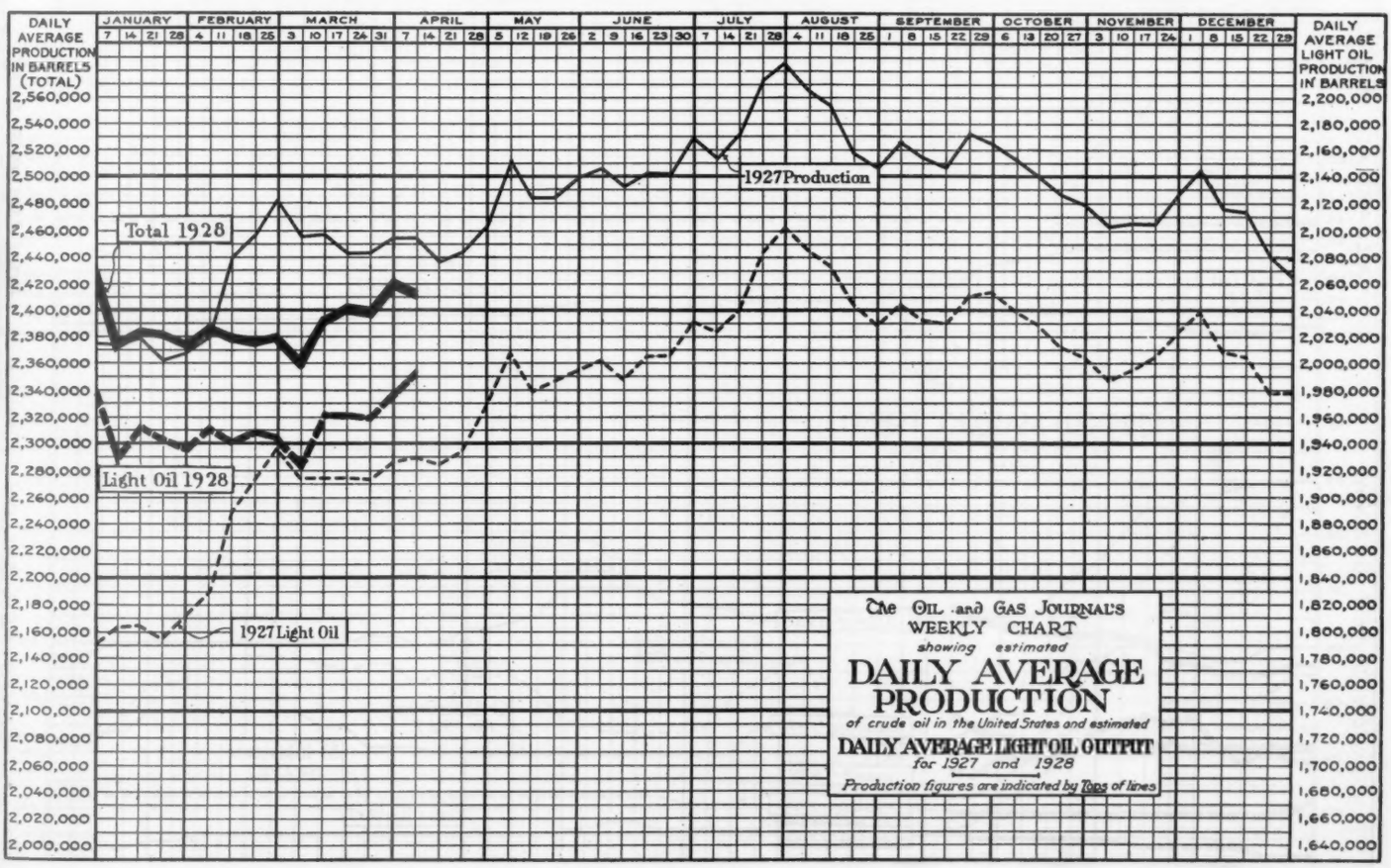
While the Seminole Field in Oklahoma is not declining as rapidly in output as many believed would be the case, further decreases in production there will be recorded before any new production is developed and it is generally conceded the price structure for "sweet" oils at least will be revised upward within the next six weeks or two months. This grade of crude has shown steady declines in output and is in great demand upon the part of Mid-Continent refiners.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended April 7, and a comparison with the previous week follows:

	Apr. 7		Mar. 31	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	14,540	.....	14,185	.....
Burbank	39,265	.....	40,195	.....
Other Osage Fields	30,280	.....	30,465	.....
Cushing and Shamrock	20,970	.....	21,045	.....
Bristow	24,425	.....	24,585	.....
Seminole	283,410	.....	288,240	.....
Northern Miscellaneous	156,420	.....	157,615	.....
Southern Fields	58,365	.....	58,510	.....
Total Oklahoma	627,675	.....	635,470	.....
West Texas—				
Hendricks	209,270	.....	195,832	.....
Yates	48,638	.....	44,807	.....
Remainder	113,900	.....	114,974	.....
Total West Texas	371,808	.....	355,613	.....
North Louisiana	37,665	7,400	35,730	7,770
Arkansas	20,095	64,600	19,790	64,595
North Central Texas	131,248	.....	129,755	.....
Texas Panhandle	72,905	.....	74,230	.....
East Central Texas	23,509	.....	23,733	.....
Kansas	114,330	.....	114,070	.....
Total Mid-Continent Area	1,399,235	72,000	1,388,391	72,365
Gulf Coast	.....	125,914	.....	125,897
Southwest Texas	.....	27,151	.....	26,974
Eastern	102,500	.....	102,000	.....
Rocky Mountain Area	77,009	.....	77,033	.....
California—				
Santa Fe Springs	37,250	.....	37,250	.....
Long Beach	139,000	.....	132,500	.....
Torrance	2,000	17,000	2,000	17,000
Huntington Beach	56,750	.....	57,250	.....
Dominguez	12,250	.....	12,250	.....
Inglewood	18,000	11,500	18,000	11,500
Ventura Avenue	51,750	.....	54,000	.....
Seal Beach	39,000	.....	39,000	.....
Remainder of State	60,000	167,000	60,000	189,000
Total California	416,000	195,500	412,250	217,500
Total United States	1,994,744	420,565	1,979,674	442,736
Grand Total		2,415,309		2,422,410

Total Decrease, 7,101 Bbls.; Light Oil Increase, 15,070 Bbls.



Oklahoma Refined Market Stronger

All Gasolines and Kerosenes Advance During Week. Fuel Oil Firm Despite West Texas Competition

By W. T. Ziegenhain

Prices continue to advance in the Oklahoma refinery market as fast as they are supported by increased consumption and although crude oil runs have been increased 24,000 bbls. and stocks of gasoline are relatively high, refiners are confident that prices may be given additional advances over next week. Natural gasolines have shown similar strength, prices advancing on all grades. Kerosene featured the refinery market as it was advanced to 4¾ cents with some refiners quoting 5 cents for delivery over the last half of the month. Gas oil showed another advance but there continues to be plenty of this material available. Fuel oils showed little change except that the low gravity fuels were advanced to 82½ cents as the bottom price. The lighter gravity fuels were not consistently supported during the week and there was no tendency toward boosting prices.

Lubricants moved at a slightly better rate but prices remained unchanged. Wax inquiries have become fewer but as most of the production has been sold for delivery over the month, refiners are confident the present lull in the market is simply a result of the heavy buying during the last weeks and that over the month prices will continue to slowly advance.

If the "spirit" of the market may be taken as an index of the future price trend there is little doubt but that additional price advances will be made. Most sales managers report a large movement of gasoline, in supporting their belief that the market is able to go still higher before resistance from buyers will be met. The statistical position of the industry is admittedly none too strong and could not be taken as justification for higher refinery prices compared to the prices over last year. In other words, total stocks of all oils have been increased to the highest figure they have ever reached and crude production continues to increase at a greater rate than the increase in consumption, even though considerable production is being shut in both in the Mid-Continent and in California. But, if refiners are to gauge prices by those set during last year and attempt to draw comparisons between stocks, refinery runs and production now and then, they probably could not justify reasonable prices now, nor possibly for the next two or three years. Instead, prices must be set to allow a reasonable return on the investments already made in the refineries and marketing facilities.

As long as refiners co-operate in endeavoring to establish such a price structure reasonable additional advances may be expected even though these are not supported by a crude raise or a general tank wagon advance.

Crude Advance

Some are anticipating a 25-cent crude advance and a 2-cent tank wagon advance in the immediate future and this feeling seems general among marketers. For this reason, they are not offering resistance to the higher refinery prices and have increased their purchases during the last two weeks of increasing prices rather than to curtail buying.

Gasolines and Naphthas

The regular 58-60 U. S. Motor grade led in the advance in prices among the different grades, but all were stronger. Export inquiries for the 64-66 375 endpoint grade coupled with the fact orders were being filled, strongly supported prices on this grade but the domestic demand was only fair. A decided falling off of shipments of the 60-62 437 endpoint

(Continued on Page 151)

REFINED MARKET BAROMETER

Higher refined oil prices were well supported in practically all refining centers, and, although gasoline stocks are high and crude runs have been increased in some sections, the increased demand more than offsets these factors and still higher prices are anticipated. Natural gasoline shared in the advance in both the Mid-Continent and in California. Kerosene prices were advanced in the Mid-Continent and in California while the eastern market remained firm. Gas oil was stronger as a result of its higher value as a cracking stock but there was plenty of material available at the higher prices. The fuel oil market continues to show marked stability in all sections. The eastern seaboard refiners are receiving large volumes of Venezuelan and West Texas crudes which yield a higher percentage of fuel, but the market is readily absorbing this volume. The fuel market remains firm in the Mid-Continent but increased crude runs, coupled with the building of refineries in West Texas area, places the future of the fuel market in a less secure position. Lubricants and wax show no change in price and the demand is only slightly better.

Mid-Continent—Refinery gasolines and natural gasoline continued to strengthen in price and additional advances are anticipated, especially in natural gasoline. Kerosene prices were advanced but were meeting buying resistance. Fuels remained firm, but the future trend of prices remains uncertain.

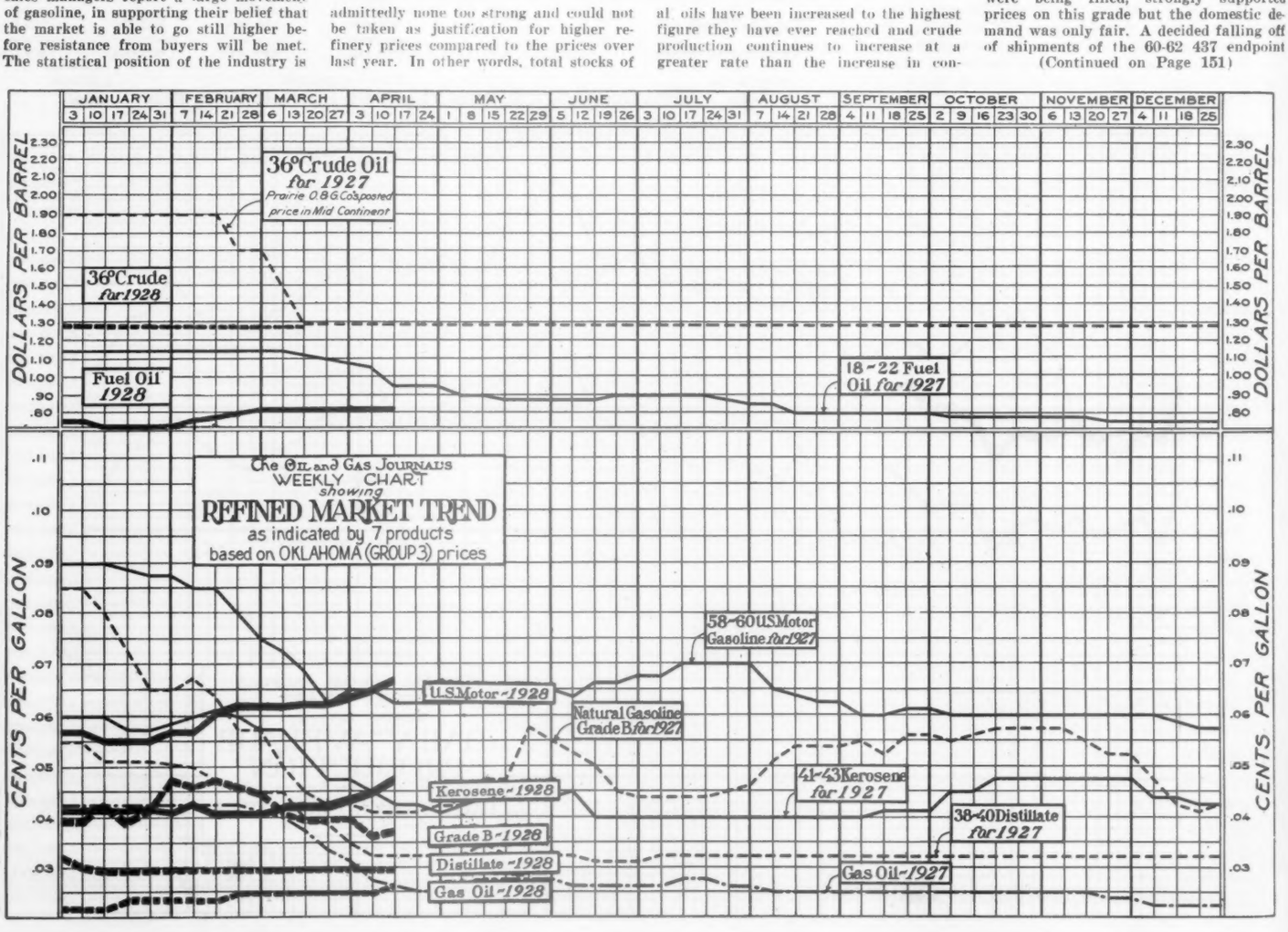
Eastern Seaboard—Higher retail and tank car gasoline prices were supported by a very active market and with new export purchases expected to be made over next week, still higher prices are anticipated. Fuel prices are firm, but there is an ample supply from the Venezuelan and West Texas crudes being refined along the eastern coast.

Chicago—All refinery products participated in higher prices as the demand increased. Marketers are not resisting the higher tank car prices.

Pennsylvania—The greater demand for gasoline and kerosene supported higher prices and the future of refinery prices is viewed with optimism.

Gulf Coast—A few revisions in the Gulf Coast lub market were made, these revisions being upward. Fuel prices are unchanged but are not being given the support that is being given the balance of the products.

California—The general market is in a very good position to continue to advance.



Mid-Continent Runs Up 24,080 Bbls.

Exceeded Only Once Before. Oklahoma Shows Greatest Increase. Small Plants Added in West Texas

By W. T. Ziegenhain

Mid-Continent crude runs for April show an increase of 24,080 bbls. daily compared with those of last month and are 49,365 bbls. higher than a year ago. These increases are chiefly due to the Oklahoma refineries running more oil, but over the year, substantial increases are shown for all states. North Central Texas is the only section not showing an increase over its runs a month ago and this is attributed to a shortage of local crude in the north central section.

Over the month, Oklahoma runs were increased 15,700 bbls., this gain resulting from runs being increased at the larger refining units. Compared to a year ago, the increase amounts to 20,550 bbls. North Central Texas shows a decline in its runs for April compared to March of 2,000 bbls. and shows an increase of 12,525 bbls. compared to a year ago. Kansas, North Louisiana and Arkansas also show increases for both the month and the year but for small amounts.

With the total runs in the Mid-Continent for April at 451,225 bbls., this is exceeded by only one month. During August of last year the runs were shown as 457,800 bbls., the highest they have ever been. As refiners enter the period of high gasoline consumption it is natural to expect increased runs in proportion to the increased consumption and stocks but many have adopted a policy of holding their runs down to the schedule observed during the winter in hopes of holding stocks to a low figure. This in turn is intended to strengthen the refined oil prices and to eliminate a repetition of last year's "dumping" of gasoline just at the time when consumption was at its peak and maximum prices normally expected. The increase of the runs during April of this year amounting to 24,080 bbls. represents an increase of less than 6 per cent, which is below the rate of increased consumption, but many refiners who have not boosted their crude runs say the difference does not allow a comfortable margin and insist that the increased consumption cannot be taken as justification of the increased runs, if higher refined oil prices are to be established, and point to the heavy stocks of refined oils and crude oil being carried in the Mid-Continent as evidence that we do not need to run more oil.

There is a tendency for small plants to be established in the West Texas area, most of these representing small investments and having a small capacity. Because of the relatively high freight rates out of the territory, these plants depend on the local consumption to take their products and wherever there is a sufficiently great concentration of population to support a small plant, that point immediately presents itself as a likely refinery center. During April the Wickett Refining Co. will complete a 2,500-bbl. plant at Wickett, to run the tops from West Texas crude purchased from the Bluebonnet Refining Co., also at Wickett. The plants are adjacent. While this will not increase the runs for April, the starting of the Wickett Refining Co.'s plant during May will permit the Bluebonnet company to increase its runs at the same time and new equipment is being added to facilitate an increase of 2,000 bbls. at the latter.

The Odessa Refining Co. is building a skimming plant of 700 bbls. capacity at Odessa and will be operating during the latter part of April. The Sweetwater Refining Co. has resumed the operation of its plant at Sweetwater and will average 500 bbls. for the month. The Central Texas Refining Co. is also operating its plant at Brownwood, formerly operated by the Patterson Refining Co. It will run 500 bbls. daily during April.

Kansas

Increased runs at a few of the larger refineries in Kansas are responsible for the increased runs for the State. The only other change noted in the operations is the temporary shutting down of the Wilhoit Refining Co.'s plant in Joplin, Mo., which is carried as a Kansas plant in the grouping. The plant will resume operations May 1.

Oklahoma

The increased crude runs for Oklahoma are due principally to greater runs at a relatively few plants. There were no changes made in the plants shut down nor were any plants shut down during the month.

North Central Texas

While several plants will resume operations in the West Texas area and others are being built there, as mentioned previously, Texas as a State will not show an increase in its crude runs. Local crude is scarce at many of the North Texas plants and this is holding refiners to their normal schedule. Premiums are not justified in most cases because of the relatively low refined oil prices and as a result, there is little change in operations there. Two plants have been shut down temporarily, the Kent-Middleton Refining Co.'s plant at Minerva and the Swastika Refining Co.'s plant at Muenster.

North Louisiana

A small increase in the crude runs in this section has been made due to the favorable demand being witnessed for refined oils. This increase has been general.

Arkansas

There were very few changes in the operations of the Arkansas refineries, the principal change being in their increased crude runs. This increase was the result of higher runs at a few refineries rather than in general.

RUNS TO STILLS IN MID-CONTINENT REFINERIES

1926	
April 1	368,210
May 1	391,355
June 1	415,450
July 1	410,070
August 1	407,475
September 1	419,995
October 1	408,975
November 1	417,575
December 1	403,450
1927	
January 1	403,625
February 1	418,595
March 1	418,920
April 1	401,860
May 1	407,355
June 1	426,170
July 1	428,075
August 1	457,800
September 1	422,150
October 1	420,955
November 1	426,645
December 1	417,455
1928	
January 1	415,125
February 1	418,275
March 1	427,145
April 1	451,225

MID-CONTINENT REFINERY OPERATIONS

TABLE NO. 1

(Based on operations April 1, 1928, and March 1, 1928)

	*No. of Plants April 1	Crude Cap'y. Bbls.	Crack. Cap'y. Bbls.	Plants Oper'g. April 1	Runs to Stills April 1	Plants Oper'g. Mar. 1	Runs to Stills Mar. 1	Daily Inc.
Oklahoma	47	278,700	103,550	40	192,225	40	176,525	15,700
N. C. Texas	45	192,000	25,200	36	107,050	35	109,050	†2,000
Kansas‡	20	142,500	68,800	15	90,250	16	86,250	4,000
N. Louisiana	4	48,500	16,800	4	42,000	4	37,670	4,330
Arkansas	9	32,300	9,700	7	19,700	7	17,650	2,050
Total	125	694,300	224,050	102	451,225	102	427,145	24,080

*Does not include plants shut down one year or more. †Decrease. ‡Includes two Missouri plants.

TABLE NO. 2

(Based on operations April 1, 1928, and April 1, 1927)

	*No. of Plants April 1, 1927	Crude Cap'y. April 1, 1927	Plants Oper'g. April 1, 1927	Runs to Stills April 1, 1927	Daily Inc. April 1, 1928
Oklahoma	48	269,900	42	171,675	20,550
N. C. Texas	40	164,200	35	94,525	12,525
Kansas‡	20	126,000	15	79,400	10,850
N. Louisiana	5	43,300	4	37,760	4,240
Arkansas	10	32,000	7	18,500	1,200
Total	123	635,400	103	401,860	49,365

*Does not include plants shut down one year or more. ‡Includes one Missouri plant.

REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Arkansas City Refining Co., Arkansas City	8,000	(*)	(*)
Barnsdall Refineries, Inc., Wichita	4,000	4,500	3,500
Derby Oil Co., Wichita	6,000	3,500	3,500
Derby Oil Co., Russell	2,500	(*)	(*)
Eldorado Refining Co., Eldorado	3,500	2,000	2,200
Golden Rule Refining Co., Wichita	1,500	700	750
Kanotex Refining Co., Arkansas City	10,000	4,000	4,000
Manhattan Oil Co., Kansas City	6,000	4,500	4,000
Miller Petroleum Co., Humboldt	2,000	(*)	(*)
National Refining Co., Coffeyville	6,500	6,000	6,000
Peerless Oil Refining Co., Chanute	3,000	2,050	2,200
Roxana Petroleum Corp., Arkansas City	20,000	17,000	16,000
Sinclair Refining Co., Coffeyville	10,000	9,500	9,500
Sinclair Refining Co., Argentine	8,000	8,000	8,000
Skelly Oil Co., Eldorado	23,000	12,000	10,000
Standard Oil Co. of Kansas, Neodesha	12,000	8,000	7,500
Vickers Petroleum Co., Potwin	3,500	1,900	2,000
White Eagle Oil & Refining Co., Augusta	10,000	6,600	6,600
West Missouri Group—			
Alliance Rubber Producing Co., Centropolis	2,000	(*)	(*)
Wilhoit Refining Co., Joplin	1,000	(*)	500
Total	142,500	90,250	86,250

*Shut down.

REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Anderson-Prichard Oil Corp., Cyril	2,500	1,900	2,000
Barnsdall Refineries, Inc., Barnsdall	6,000	4,000	3,700
Barnsdall Refineries, Inc., Okmulgee	10,000	5,000	4,000
Bell Oil & Gas Co., Grandfield	4,500	2,100	2,100
Bolene Refining Co., Enid	5,000	2,500	3,000
Canfield Refining Co., Yale	400	75	75
Champlin Refining Co., Enid	16,000	9,500	9,750
Continental Oil Co., Sapulpa	10,000	1,200	2,000
Cushing Refining & Gasoline Co., Blackwell	1,500	1,500	1,500
Cushing Refining & Gasoline Co., Cushing	3,500	2,000	2,000
Empire Oil & Refining Co., Cushing	5,000	4,700	4,700
Empire Oil & Refining Co., Okmulgee	4,000	4,000	3,000
Empire Oil & Refining Co., Ponca City	7,500	7,500	7,500
Garber Refineries, Inc., Garber	3,500	3,000	3,200
Gilmer Oil Co., Ringling	1,500	(*)	(*)
Globe Oil & Refining Co., Blackwell	7,500	5,000	4,500
Illinois Oil Co., Cushing	3,000	2,200	1,800
Imperial Refining Co., Ardmore	5,000	(*)	(*)
Independen. Oil & Gas Co., Okmulgee	5,000	3,500	3,500
Interocean Refining Co., Bristow	4,000	(*)	(*)
Johnson Oil Refining Co., Cleveland	6,000	5,000	5,000
Mariand Refining Co., Ponca City	30,000	30,000	20,000
Mid-Continent Petroleum Corp., West Tulsa	40,000	25,000	23,000
Oil State Refining Co., Enid	2,000	(*)	(*)
Oil State Refining Co., Allen	800	600	600
Peppers Gasoline Co., Covington	1,000	800	800
Pierce Oil Corp., Sand Springs	8,000	7,000	7,000
Producers Oil Co., Bristow	2,500	800	800
Producers & Refiners Corp., West Tulsa	6,000	3,600	3,800
Pure Oil Co., Ardmore	5,000	(*)	(*)
Pure Oil Co., Muskogee	9,000	7,000	7,000
Riley Petroleum Co., Bristow	1,000	300	300
Rock Island Refining Co., Beckett	2,500	1,600	1,600
Sayre Oil & Refining Co., Sayre	500	(*)	(*)
Shaffer Oil & Refining Co., Cushing	10,000	10,000	10,000
Sun Oil Co., Yale	5,000	4,900	4,900
Sinclair Refining Co., Muskogee	1,000	700	600
The Texas Company, West Tulsa	12,000	12,000	12,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	(*)	(*)
Tidal Refining Co., Drumright	10,000	9,300	9,300
Transcontinental Oil Co., Boynton	2,500	2,000	2,000
Transcontinental Oil Co., Bristow	5,000	4,000	3,500
Tonkawa Petroleum Co., Tonkawa	2,500	650	700
Western Oil Corp., Beckett	2,000	1,000	1,000
White Oak Refining Co., Allen	2,000	2,100	2,100
Wirt Franklin Petroleum Corp., Ardmore	4,000	3,200	3,200
Yale Oil Corp., Yale	1,500	1,000	1,000
Total	278,700	192,225	176,525

*Shut down.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Amarillo Producers & Refiners Corp., Isom	2,000	1,500	1,300
Amarillo Refining Co., Amarillo	6,000	2,500	2,850
American Refining Co., Wichita Falls	6,000	2,600	2,300
Western Oil Corp., Wichita Falls	1,500	(*)	(*)
Bluebonnet Refining Co., Wickett	5,000	3,000	3,000
Central Texas Refining Co., Brownwood	1,000	500	(*)
Col-Tex Refining Co., Colorado	10,000	8,000	8,000
Continental Oil Co., Wichita Falls	6,000	3,200	3,200
Dale Oil & Refining Co., Electra	2,500	1,250	1,200
Empire Oil & Refining Co., Gainesville	5,000	4,000	4,000
Falls Refining Co., Wichita Falls	1,500	600	1,000
Gulf Refining Co., Fort Worth	10,000	7,000	8,000
Hagaman Refining Co., Tiffin	2,000	200	200
Humble Oil & Refining Co., Burkburnett	4,000	(*)	(*)
Humble Oil & Refining Co., McCamey	12,000	12,000	12,000
Iowa Park Producing & Refining Co., Iowa Park	2,500	1,250	1,200

(Continued on Page 150)

Gallonage Campaign Gains Momentum

Middle West Supports Plan. Believe It Will Aid in Eliminating Bad Marketing Practices. Many Suggestions Made

By C. O. Willson

CHICAGO, Apr. 7.—The movement to make 1928 a better year in the oil industry by increasing the consumption of gasoline and lubricating oils through a greater utilization of motor vehicles, has the support of the refining and marketing industry of the Middle West.

This fact was readily apparent from the expressions of opinion obtained from representative oil men in an area extending from Oklahoma to this city which is the market center of a section which at present is consuming approximately one-third of all the gasoline and lubricating oils refined in the United States. With rare exceptions representative refiners and marketers approved without reservation the suggestion contained in recent issues of The Oil and Gas Journal that the marketing branch of the oil industry center its activities in devising means to enlarge motor vehicle transportation of all kinds.

Although it is recognized that it will require some time to organize the industry around a national program which will assure the maximum benefits, many are of the opinion that immediate benefits can be obtained through the local or sectional application of the proposed plan. In discussing the suggestion that gasoline consumption could be stimulated by encouraging tourist travel the conversation invariably brings the remark, "There are a lot of places around here that people don't know anything about." These observers appreciate the national scope of the program but while this is materializing, they are anxious to try it out in the locality or area in which they are particularly interested.

The idea of adding to the profits of each company by the simple method of bettering the entire industry has apparently been welcomed with open arms by those responsible for advertising programs. In many cases these men have literally been lying awake nights in an endeavor to develop advertising suggestions and operating methods which would cause an automobile owner to buy his next "10 gallons of gas and a quart of oil," from their stations rather than at a station of a competitor. The new plan is not interpreted to mean that co-operative advertising seeking to benefit the entire industry is to completely overshadow efforts which over a period of time have established public confidence in individual companies and their products. It is simply a recognition that any scheme which seeks to aid an entire industry will benefit the individual concerns which compose it.

Eliminate Bad Practice

In this connection one Kansas marketer believes that the greatest benefit to any co-operative effort seeking to enlarge the consumption of gasoline and lubricating oils, will be the better understanding which it will tend to foster among marketing organizations. He points out that in many cases attempts made to organize those engaged in the marketing of petroleum products in a particular section have usually failed to accomplish the main objective of correcting bad trade practices. He believes that these failures can usually be explained as being due to the fact that there "was no community of interest." Selfish interests dominated the attitude of each company and the efforts of the organization were fruitless and it soon died a natural death.

United by the common interest of increasing the demand for the principal products they sell, this marketer is confident that the co-operative organization would be permanent and serve as the medium for the correction of many evils prevalent in the merchandising of petroleum products. Unwarranted price cutting and the overbuilding of marketing facilities are among the evils which could be reduced to a minimum through co-operative effort.

Variety of Plans

It would require a great amount of space to explain all the suggestions heard by the writer as to how automobile, truck and bus owners can be encouraged to use their vehicles more. The criticism that the oil industry lacks imagination in the development of its sales policies will apparently have to be shelved for the present at least.

One Kansas refiner is making a survey to determine the points of interest in his marketing territory. He has increased his own gasoline consumption several hundred per cent in doing this. He has discovered many points of scenic and historic interest in his own community of which he himself was not aware although he has lived in the same city several years. He has also discovered that during the past year a hard surface highway was completed last fall in Missouri which gives his section of Kansas a direct connection to the Ozark Mountain country.

Previously, poor roads at some points had made the Ozark trip a long and tiresome journey. Now it will be possible to make the trip over week-ends and it will be especially desirable for vacation trips of from one to two weeks duration. This particular refiner and others believe that great benefit will result to the oil industry from a campaign "to sell the automobile owner on his own town and community." The average automobile owner, it is pointed out, does not know where the places of interest are in his locality. A few years ago the automobile owner could take his less fortunate friends who did not own a car out riding and everybody was satisfied to simply "drive around the town." Now the friend has a car of his own and "no place to go."

When this so-called average automobile owner has friends visit him from out of town he generally takes them for a ride around the city or town. Unfortunately, however, from the standpoint of civic pride the host generally knows very little about his community and after he has shown his guests the tallest building, the trip usually is brought to a close. It is pointed out that through advertising of all kinds, talks to luncheon clubs and civic organizations, the oil men of a community can conduct a campaign of education which will result in every automobile owner knowing all about the places of interest in his community. Naturally when he knows about these places he will visit them with his family and take pride in showing them to his guests.

Although a majority of the distributors of petroleum products are centering their attention on the tourist and short trip phase of the increased gallonage idea, others believe that there is merit in other plans. Some point out the necessity of the oil industry co-operating in every way possible in bus and truck travel. In bus travel, transcontinental routes are rapidly being developed in addition to the intrastate routes. Carrying freight over truck routes also has tremendous possibilities in some sections of the country. Oil men can co-operate in furthering bus and truck transportation by using this service whenever possible and by encouraging others to do the same. Some marketing organizations are making a special effort to furnish these bus and truck companies with the necessary gasoline and lub oil service.

Health Feature

"Why not stress the health feature of motoring?" asks one refiner who takes an active interest in the marketing operations of his company. "Traveling in a closed car the owner can regulate the temperature to suit his own requirements and it certainly is more conducive to health than traveling in a stuffy train."

As another phase to this suggestion another refiner suggests that the health features of a "20-minute spin" with car window open will result in many business men taking the spin in the morning as they go to their offices or when they return to their homes at the close of the day's work.

Women now use their cars more than their husbands in millions of households. It is suggested that motoring as an aid to health and beauty might be brought to the attention of these women drivers with results which only the manufacturer of cosmetics or the designer of beautiful clothes could predict.

The foregoing are a few of the suggestions which are being made by an industry which has been quick to sense the possibilities of a new marketing plan. Many of these suggestions will require careful analysis and no doubt some will be discarded as worthless. Others will be revised to fit into a general scheme of advertising which seeks to increase consumption and at the same time increase the gallonage of particular companies.

STATE EXECUTIVES CLUB FAVORS PLAN TO INCREASE CONSUMPTION

CHICAGO, Ill., April 7.—The State Executives Club, which met here today, by unanimous action adopted a resolution commending The Oil and Gas Journal for its efforts to bring about a greater increase in the consumption of gasoline and lubricating oils.

Paul E. Hadlick

"The movement of The Oil and Gas Journal in promoting the sale of petroleum products is a very progressive and meritorious service to the industry," the resolution stated. The resolution was adopted following a discussion of the Journal's plans in which it was apparent that the membership was heartily in sympathy with all features of the program.

Officers of state jobber associations were in attendance at the meeting from all parts of the Middle West. The club was organized about three years ago so as to provide a means for the secretaries and other officers of the state jobber associations to meet and discuss mutual problems. The membership includes all the state associations of the Middle West and many adjoining states.

Those in attendance at the meeting are confident that much good will accrue to the entire oil industry in a campaign to increase the consumption of gasoline and lubricating oils by encouraging motorists and other owners of motor vehicles to use their cars more. Those in attendance at meeting are in close touch with marketing conditions and are certain that no difficulty will be experienced in the practical application of the plan.

H. H. Ragle of Jackson, Mich., is president of the club and presided at the meeting today. Paul E. Hadlick, secretary of the Minnesota Petroleum Association, is secretary of the club. Among those in attendance were J. A. Motter, secretary of the Kansas Oil Men's Association; Wayne Hughes, secretary of the Michigan Oil Men's Association; Russell Williams, president, and Sam T. Hurd, secretary of the Indiana Petroleum Marketers Association, and W. A. Milne, secretary of the Ohio Petroleum Marketers Association.

Pre-Mississippian Production in Texas

Evidence Submitted Tending to Prove Prolific Deep Pays of Oklahoma Are Present in North Central Texas

By M. G. Cheney
Petroleum Geologist, Coleman, Tex.

A two-page map, illustrating this article, is published on pages 32 and 33.

Completion of a 6,000-bbl. well known as Panhandle Refining Co.'s No. 7 McCluskey in the South Bend Pool of southern Young County, Texas, during July, 1927, caused much speculation by the oil fraternity. Producers and economists wondered how much additional overproduction this might lead to and geologists argued as to the age and correlation of this new deep pay found at a depth of 4,200 feet.

This first well has produced roughly 1,000,000 bbls. of oil to date. Five additional wells of much smaller yield have been completed around it, the best having an initial daily flow of 600 bbls. Failures have apparently limited the producing area to about 50 acres, located at the top of a very sharply folded closed structure. The outcropping beds show not more than 10 feet of closure; the Strawn sands which gave wells up to 2,500 bbls. initial from five sands between depths of 1,800 and 2,600 feet, showed about 50 feet of closure at the latter depth. The middle Bend beds disclosed about 100 feet of closure and developed wells of 6,000 bbls. capacity and less over a limited area. The pre-Mississippian beds probably have no less than 200 or possibly 300 feet of closure and have scored the high yield well sustained as first mentioned.

Deep Pays of Oklahoma

Perhaps the most important feature of this strike is that this deepest production comes from beds of the same age as the Hunton lime of Oklahoma which has contributed notably to the fame of that State as an oil producer. It has been held generally that the prolific deep pays of Oklahoma were either absent or unlikely to produce south of the Red River. Evidence to the contrary is submitted herewith.

First: Identifiable fossils from three of these deep South Bend wells have been assigned to the Silurian by Dr. E. O. Ulrich of the National Museum, Washington, D. C., as follows:

"Roxana's No. 9 Scott (specimen from lime showing oil and shot from 4,360 to 4,400 feet) Strophomenoid shell, probably Silurian.

"Panhandle's No. 21 McCluskey (specimen from lime oil pay secured after shot from 4,173-4,233 feet) Crinoid button suggests Silurian type. Panhandle's No. 7 McCluskey (specimen from lime oil pay secured after shot from 4,196-4,219 feet) Schuchertella, Silurian or higher, of course not Ellenburger, but suggests Ferndale, Richmond plus St. Clair."

Second: Correlation by successive well logs from South Bend to the outcrop of these beds in San Saba County convincingly shows the shale overlying this deep pay to be the Barnett shale. Dr. G. H. Girty of the United States Geological Survey states in Professional Paper 146 that this shale is of Mississippian age, probably equivalent to the lower Caney of Oklahoma. The very thin underlying limestone has a fauna "wholly unknown" but considered Mississippian also by this authority.

Third: The Ruthada's No. 4 Stovall located a few hundred feet north of No. 7 McCluskey drilled lime and sandy lime continuously from about 4,200 to 4,850 feet except for a few feet of shale around 4,700 feet. As the Bend limes are first encountered at about 3,400 feet in this pool there appears to be no probability of this thick lime series being other than pre-Barnett in age, an average amount of Bend lime having already been penetrated above this depth.

Other pre-Mississippian production in North Central Texas may be noted as follows:

Texas Pacific Coal & Oil Co.'s No. 1 Homer Lee, 4 miles north of Caddo in east central Stephens County, produced about 125 bbls of oil from a sandy lime at 4,460-79 feet, about 100 feet below the Barnett shale, before being abandoned.

Phillips Petroleum Co.'s No. 4 Witty, in the Ibex Pool of eastern Shackelford County, started off at 170 bbls. daily from lime identified as Ellenburger at 4,358 feet. Sulphur water increased as oil production decreased.

The same company's No. 1 Pence had 600 feet of oil in the hole on March 22, 1928, from top of "sand" identified as Ellenburger, depth about 4,100 feet, located in northwest Eastland County.

New South Oil Association's No 1 Vestal, southeast Callahan County, was estimated by scouts as good for 600 bbls. daily from pay at 3,762 feet. Actual production was much less when the well was completed and gradually became entirely sulphur water. Well cuttings at 3,725 feet were identified as Ellenburger, according to D. E. H. Sellards, Bureau of Economic Geology of Texas.

Empire Gas & Fuel Co.'s No 1 Johnson, southwest Callahan County, passed through the Barnett shale at 4,055 feet. Gas at 4,088 feet was estimated at 15,000,000 feet daily and at 4,140 feet another pay produced initially about 1,000 bbls. of oil and 10,000,000 feet of gas, the total yield being about 25,000 bbls. before water or exhaustion cut off the production of oil.

Earliest Producer

Perhaps the earliest producer in this class was Magnolia Petroleum Co.'s No. 3 Morris in northern Coleman County, completed in September, 1917, good for 120 bbls. of oil daily at 3,437 feet. The total yield was about 10,000 bbls. of oil and large quantities of sulphur water. Sellards placed the top of the Ellenburger at 3,432 feet.

Several barrels of live oil were recovered from the O'Hair well, 4 miles northeast of Coleman, also from the Cawyer well in northeast McCulloch County from "sands" logged at 3,305-47 feet and 1,216-35 feet, respectively. The showing in the latter well led its owners to drill a second test, the most interesting feature of this well being that this showing came from about the middle of the Ellenburger.

It is much too early to appraise the economic value or to outline the areal extent of these pre-Mississippian formations in North Central Texas. They have produced beyond all expectation in Oklahoma, although chiefly from the Wilcox sand (Simpson formation) which may or may not be absent in Texas. True sands have been found below the Barnett as at 4,548 feet in the Jacob Oil Co.'s No. 1 Weldon in southern Young County. The Hunton lime is at least 200 feet thick at South Bend but not definitely identified elsewhere in North Texas to the writers' knowledge. The Ellenburger lime and dolomite seems to be present in thicknesses probably exceeding 1,000 feet over North Central Texas. It offers reservoir conditions in its upper fine-grained member about 100 feet thick where leaching or brecciation has occurred, also below this in its several dolomitic members which are noted for large flows of water. The upper member may be eroded over the higher folds. Production from the Ellenburger is doubtless comparable to the Siliceous lime or Turkey Mountain sand of northeast Oklahoma and southeast Kansas, there commonly yielding a few large wells at the top of small closed structures. The oil carries very little sulphur and is of high test, 40 to 44. It has evidently migrated into these reservoir rocks from the overlying shales, called Barnett in Texas and Chattanooga in Oklahoma, probably being pressed out by the accumulating overburden of sediments and by compressive folding forces. These shales originate as muds with more water than mineral content. Apparently the oil may have originated as a life process or as a residue following decomposition or as a product of pressure and heat upon organic material, plant or animal. The fluids must largely migrate out of these compacting muds and will migrate as porosity permits toward areas of least pressure.

Shallow Water Origin

Field observations furnish convincing proof of the shallow water origin of the sedimentary deposits of the Mid-Continent area. Therefore these beds must have been laid down nearly level and each bed represents the approximate position of sea level at the time of its deposition. From this it may be demonstrated by well data that at the close of Strawn times the Barnett shale was under a pressure of about 2,500 pounds per square inch in Young County as against about 4,500 pounds some 50 miles east. The accumulation of oil in the very pronounced fold at South Bend in porous beds above and below the Barnett shale appears very reasonable. Likewise oil from the Barnett and Bend formations should have migrated westward and southwestward from a large area north, east and south of Hood County, Texas, during the long period, while 5,000 feet or more of overburden was accumulating, and remaining there as against 1,500 feet over the present axis of the Bend arch, 600 feet in southwest Callahan County and none at all in southwest Coleman County.

Data at hand indicates that an extensive northeast dip developed in the pre-Strawn beds during Pennsylvanian times from a low-lying land herein called the Concho Divide extending northwest from the Llano Burnet area in Central Texas, and that no Bend arch existed until westward tilting of all beds occurred during the development of the great Permian Basin to the west. The Hunton arch on which the Seminole structures are located in Oklahoma seems to have had a similar origin, although influenced no doubt by proxmity to the Arbuckle Mountains on the south and especially by greater subsidence during pre-Boggy times to the east. The east flank of the Bend arch is located where the strongest eastward monoclinal dips were developed in the Bend and earlier beds during Strawn deposition. The arches themselves are areas left relatively high between areas of marked subsidence. Had they been areas of elevation the arched beds would have shown more erosion and marine sediments would be absent from their axis. Oil in beds older than both subsidences will tend to migrate along bedding planes, unconformities and porous members toward the higher parts of these arches and will form local accumulations as controlled by folding and porosity.

What Map Shows

The accompanying map shows the approximate present position referred to sea level of the pre-Mississippian surface over which the Barnett and Chattanooga muds were deposited. This datum plane is not a given bed but an old nearly featureless topography which has been affected and changed by many subsidences and elevations, local and regional. To this extent only is it a map of structure; the structure of the underlying beds varying more or less from this old surface.

The location of oil pools, also of wells in North Central Texas which have produced oil from the pre-Mississippian beds, have been added. It appears that only the most pronounced folds should be prospected in Texas for this deep production, especially until more is known as to the areal extent of these older beds.

Many of the control points have been taken from the Ellenburger map prepared by Sellards and published in the Bulletin of the American Association of Petroleum Geologists, Volume 4, page 283, while many others have been contributed by the numerous oil companies working in this region. Much data has been taken from publications of the Oklahoma Geological Survey, the United States Geological Survey and the Bureau of Economic Geology, Texas University; to all of whom the writer gratefully acknowledges his indebtedness.

PROPOSED PLAN FOR CO-OPERATION TO CHECK UNNECESSARY OPERATIONS

The advisory committee on conservation appointed by the Mid-Continent Oil & Gas Association has completed its preliminary draft of its plan of operations and will submit it to the Kansas-Oklahoma executive committee at a general meeting at association headquarters, Wednesday, April 11, at 2 o'clock.

The plan contemplates co-operation with the industry in reducing wildcat drilling and promoting unit operation or pooling arrangements in such areas as may be opened by wells which are required to be drilled by lease or offset requirements.

In case new pools are brought in, the committee requests authority to intervene and establish co-operative restrictions similar to those in effect in the Seminole area. The committee proposes to use an umpire to facilitate its operations and to secure better contact with the operators. It also asks the larger operators who have been assisting, by purchase of acreage or otherwise, in the testing of new structures to announce that this will not be done until conditions change. The committee has also started negotiations with the Texas division and the Louisiana-Arkansas division to secure similar curtailment activities in those regions.

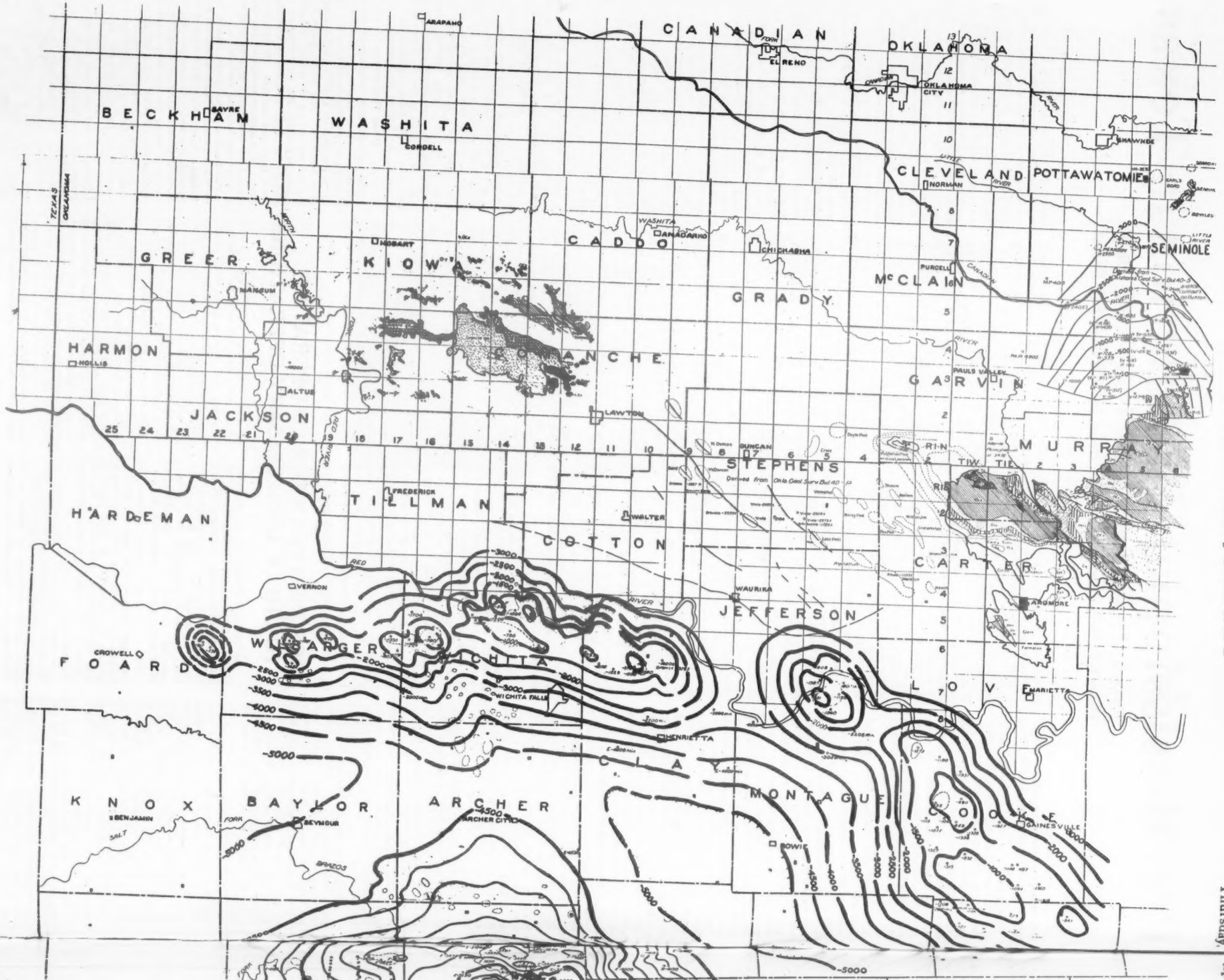
The proposed plan follows:

Proposed Plan on Conservation

This committee was appointed at a meeting of the Kansas-Oklahoma division of the Mid-Continent Oil & Gas Association on March 23. The purpose in creating the committee was to create a central agency to act in an advisory capacity on conservation of crude oil in the two states mentioned and to recommend the appointment of similar committees in the Texas division and Louisiana-Arkansas division.

It is assumed by the committee that every oil producer in the Mid-Continent

(Continued on Page 149)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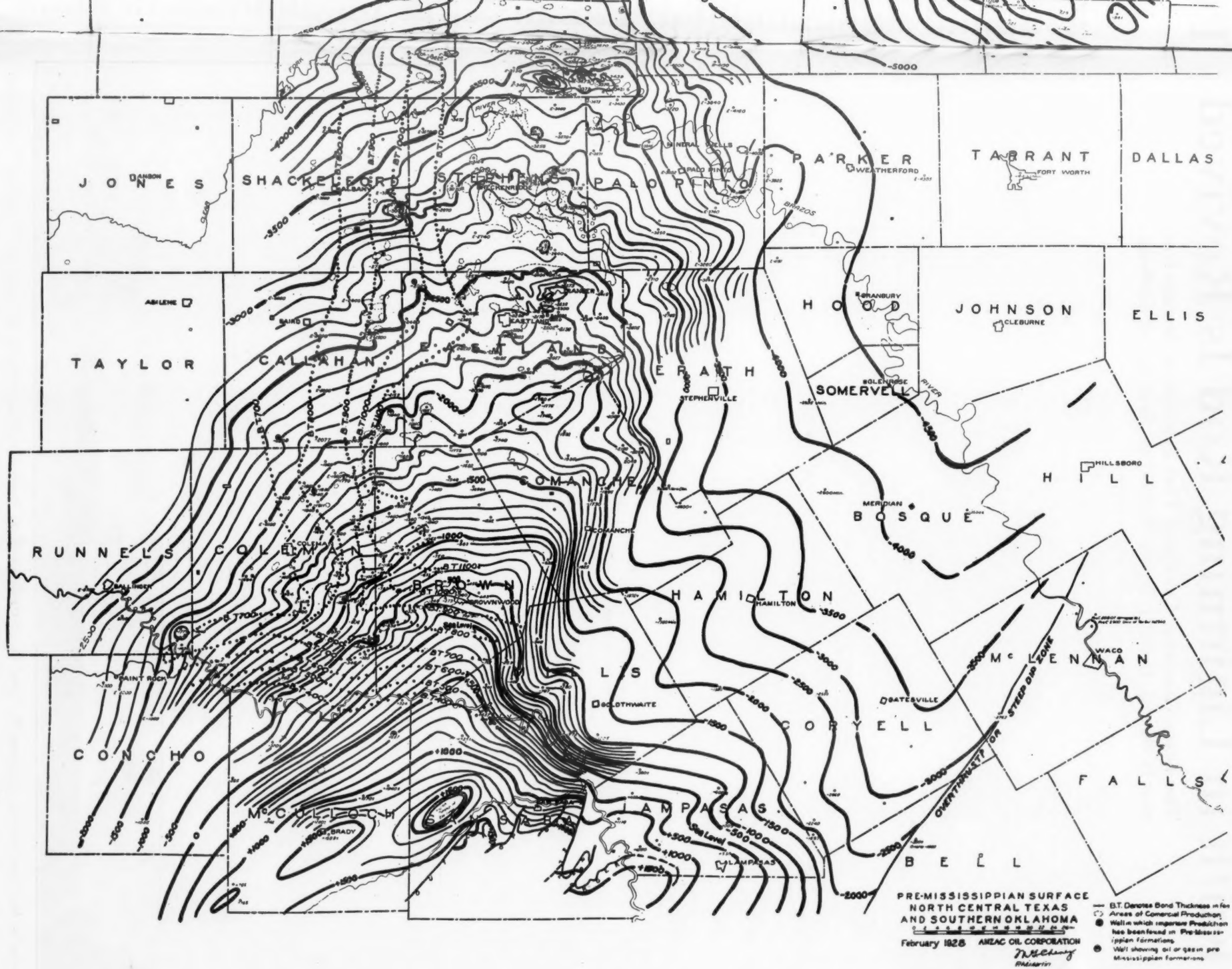
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Well showing oil or gas in pre Mississippian formations

Faith in Lightning Rod Is Revived

The Texas Company, Convinced That Principle of Ancient Device Is Sound, Installs Tower Protective Systems at Cushing

By Thomas F. Smiley

Revival of faith in the old-fashioned lightning rod, which seemed to be in penumbra for a time, is evidenced by the manner in which oil companies are turning in confidence to this ancient form of protection. Probably the most important instance of reversion to the lightning rod principle is afforded by The Texas Company, which, following semi-experimental operations in Texas, has installed tower systems for protection against lightning at two tank farms in the Cushing Field in Oklahoma.

The two tank farms, designated as No. 1 and No. 2, are about a mile apart. The accompanying picture shows part of No. 1, which contains 29 tanks protected by 9 towers. There were 32 tanks originally, but fire caused by lightning destroyed 3 of the tanks before the protective system had been built. Two tanks were lost through fire in September, 1924, and another was burned in June, 1925.

Each of the nine towers is to all intents and purposes a lightning rod, raising its copper-tipped head some 130 feet above the oil tanks that surround it. Scientific experiments are said to have demonstrated that a pole or conducting rod provides protection from lightning to an area whose circumference is four times the height of the pole or rod. The nine poles in No. 1 farm in the Cushing Field are distributed so that each affords protection to four tanks where these tanks are located at uniform intervals.

Each of the No. 1 farm towers is made of light fabricated steel and is 150 feet high. This is surmounted by a brass pipe about 8 feet high. From the top of this pipe extends a cluster of hard-drawn copper wires about 3 feet long These wires are brazed to the pipe and their upper ends are curved outward so that they suggest the shape of a peach basket.

All Steel Hot-Galvanized

All the steel entering into the construction of the towers is hot-galvanized. Every bolt and nut also is hot-galvanized. which means that it is submerged in a bath of liquid zinc, thus making it impervious to corrosive influences.

From each of the four legs of each tower two 3-foot anchor bolts extend down into a concrete footing. To each anchor bolt a copper wire is fastened firmly by using both a clamp and solder. Under the center of the concrete footing is an 8-foot hole with a coil of copper wire at the bottom. Each of the wires attached to an anchor bolt is run down this hole to the copper coil, to which it is attached securely. With the hole refilled a perfect ground connection is effected.

Since the copper wires are connected to the anchor bolts in the concrete footing, protection from corrosion and permanence of the initial perfect contact are assured.

J. L. Culbertson, chief engineer for the Texas Pipe Line Co. of Oklahoma, a Texas Company subsidiary, who supervised construction of both the lightning protection plants in the Cushing Field, said that instead of running the wires from the anchor bolts to an underground coil, they could have been attached to a buried pipe line with just as complete assurance of safety from lightning stroke. The only reason that this form of ground was not used in Cushing was that no permanent buried line was convenient.

The protective system installed in the No. 2 farm differs from the other in that the towers are 180 feet high instead of 150 feet, thus affording a wider radius of protection. The towers at No. 1 have a 20-foot base, those at No. 2, 22-foot.

Cost of Installation

The tanks in both farms are of 55,000-bbl. capacity. It is figured that the cost of the tower system is 3.98 mills for each barrel of oil protected. On this basis, the No. 1 farm installation, with a full complement of 55,000-bbl. tanks, would represent an expenditure of about $7,000. Mr. Culbertson pointed out that with 80,000-bbl. tanks, the cost would be reduced to 2.74 mills for each barrel protected, thus making the cost for a 32-tank farm containing 2,560,000 bbls. the same as for protecting 1,760,000 bbls. when the smaller-size tanks are used.

The protective system for No. 1 farm, which was put up first, was built under contract by the Muskogee Iron Works. On No. 2 farm, the Texas Pipe Line Co. of Oklahoma purchased the fabricated steel required from the International Derrick & Equipment Co. and installed the system with its own workmen.

In 1923 and 1924, The Texas Company installed protective systems at several of its tank farms in the Port Arthur territory of Texas. Prior to that time the company had been suffering losses from lightning every year. In not one instance after equipment with the tower system did property suffer lightning loss.

An incident which strengthened the confidence of The Texas Company officials in the scientific soundness of the tower system was recounted by Mr. Culbertson. This system had been installed at one of the company's tank farms near Beaumont. Lightning struck and ignited an open storage tank of an unprotected farm adjoining The Texas Company's. J. B Alleman, the company's superintendent in that district, hurried to the scene of the fire while the storm was still raging to take any measures that might seem needful to prevent the flames from spreading to the tanks under his care. It was his fortune to see lightning strike one of the protective towers. If it had not been for the tower, Mr. Alleman declared, nothing could have prevented the bolt from striking a tank and starting a costly fire.

Plants Same in Principle

The protective plants installed by The Texas Company five years ago in Texas are exactly the same in principle as the more modern ones built in the Cushing Field, the points of difference being chiefly those of structural details.

Some students of lightning phenomena in recent years were led to the conclusion that the lightning rod principle was defective, declaring that the ordinary lightning rod or tower was likely to increase the number of primary discharges of lightning through the very fact that these devices attracted the discharges to themselves by guiding and controlling the direction of the flash and offering a prepared path to the ground. This property of the lightning rod, it was asserted, was the direct cause of secondary discharges of lightning in the immediate vicinity, these secondary discharges being sources of great danger. The secondary discharges, it was explained, occurred simultaneously with the flash of lightning, or primary discharge, being sparks of lesser magnitude in or among objects nearby.

This theory, which tended to discount the value of the well-known and long-trusted lightning rod, did not cause any interruption of laboratory experiments designed to ascertain as much as possible about lightning and how to defeat it—by improved lightning rods, if they should be found scientifically sound in principle; by some other means if it should be found that the old standby would have to be tossed into the scientific scrap heap.

Principle Declared Sound

"The lightning rod principle is absolutely sound, and the tower we use at the tank farms is nothing more or less than a lightning rod," said Mr. Culbertson. "The only trouble with the lightning rod of our fathers was that sometimes it was imperfectly grounded. Carefully conducted experiments have demonstrated beyond the shadow of a doubt that a lightning rod—or its equivalent, a protective tower—when built properly and grounded thoroughly and permanently, provides safety from lightning."

Of interest in this connection are the findings of F. W. Peek, Jr., consulting engineer of the General Electric Co., who has made searching investigation into lightning phenomena. In a paper on "Lightning. With Special Reference to the Protection of Oil Tanks," read before the American Institute of Electrical Engineers, Mr. Peek says:

"Various principles found in the general study of lightning, as well as specific investigations for transmission lines, etc., can be applied to oil-tank and reservoir protection. Although work on models and theoretical work cannot always

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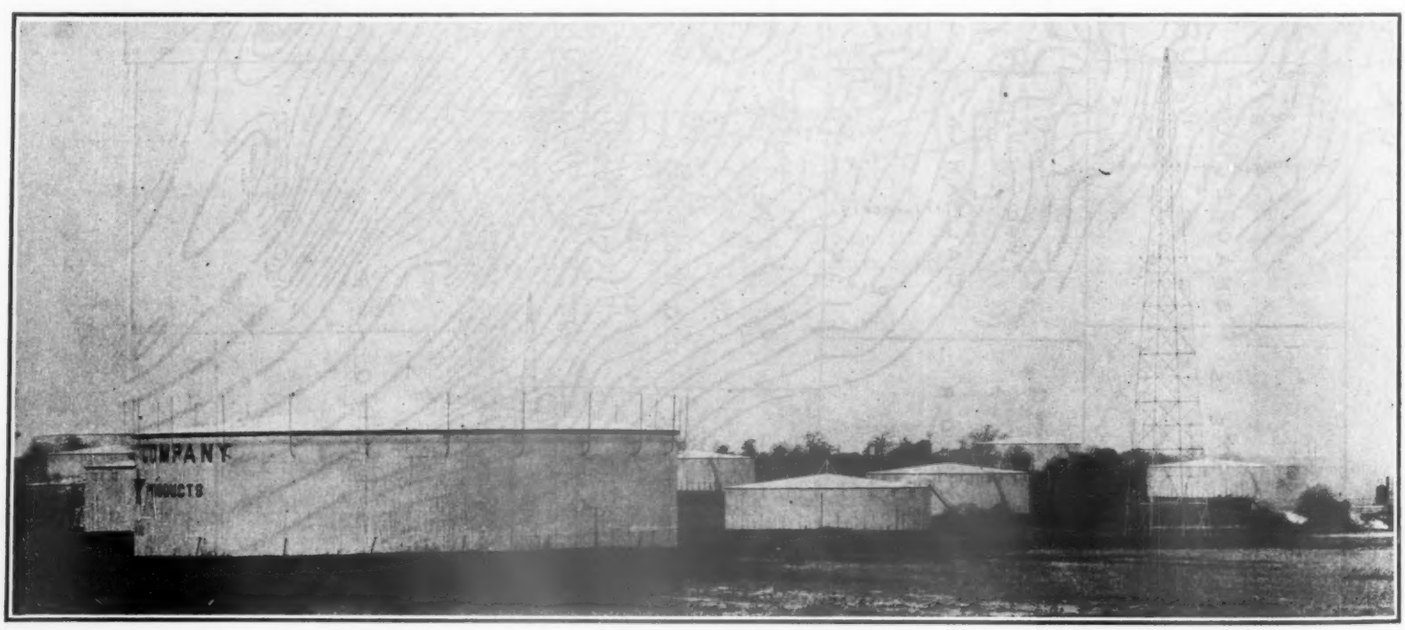

Section of No. 1 tank farm of the Texas Pipe Line Co. of Oklahoma in the Cushing Field, showing tower system for protection from lightning.

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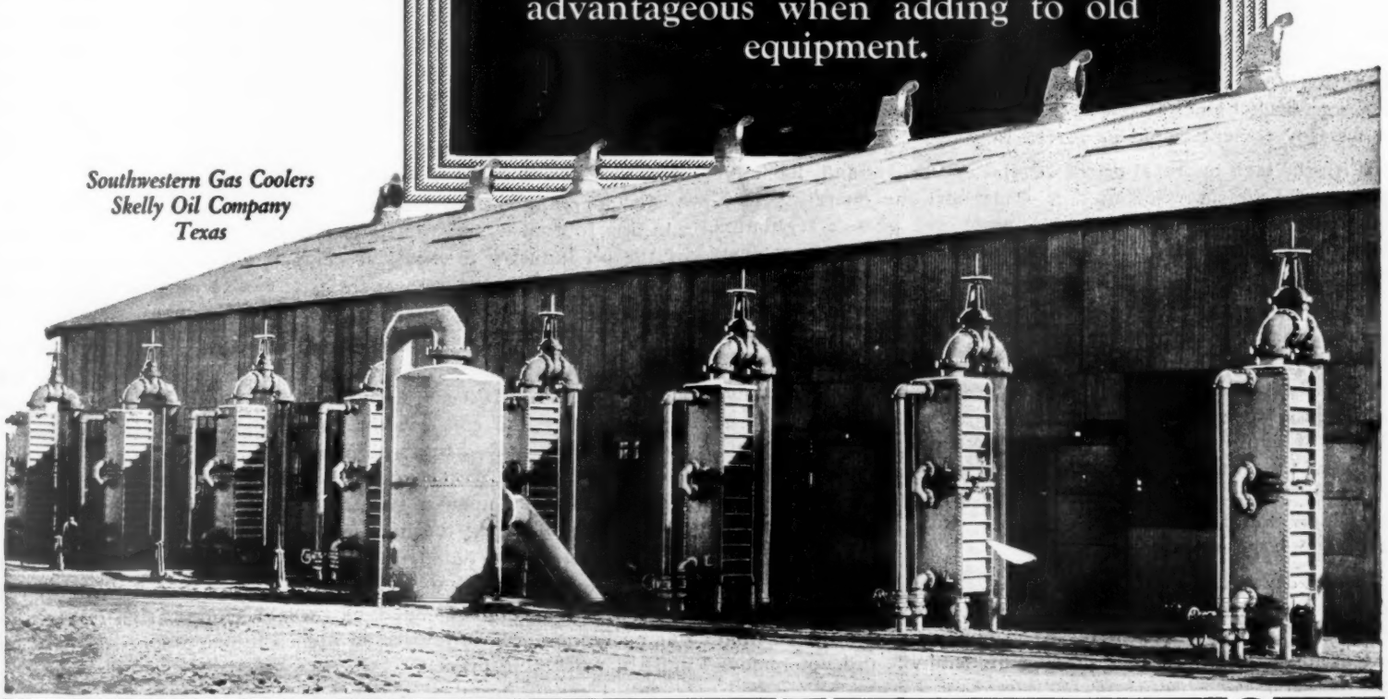

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COMPETITION FOR LOSSES

It was a year ago this month that the oil industry, despairing of any other remedy, turned to co-operation as a means of checking disastrous overproduction.

The story of Seminole is an example of what co-operation can do. It would have been much more effective had it been resorted to sooner but the ingrained individualism of the industry could not be overcome at once. That it finally was overcome was due to the realization that if operators "did not hang together they would hang separately" since it was a certainty if the industry failed to act the Government would be forced to.

With the tacit approval of the federal authorities and the active assistance of the state officials of Oklahoma the operating companies at Seminole were able to co-operate on a plan of regulation which proved the ability of the industry to solve its own problems when allowed to do so.

It was recognized at the outset and more generally since that "the question of overproduction from the standpoint of conservation of our natural resources and the economic utilization of our oil products is general rather than local, and that any comprehensive plan looking to an amelioration of overproduction would not be effective if applied only to Seminole." It was the consensus of opinion at the initial meeting "that in so far as Seminole was concerned any program adopted must be part of a more comprehensive plan which would apply to all producing areas in which there is prospect of large new development."

Seminole was more pressing because the desirability of its oil and ease in transportation made it instantly available but it was the threat of West Texas and increased production in California that made action imperative. The passing of Seminole did not remove those dangers.

California, however, has shown a readiness to control production worthy of all praise. In West Texas transportation facilities have served as a check but only temporarily. While waiting for agreement among the producing companies the oil and gas division of the Texas State Railroad Commission has proposed a proration plan for consideration at a meeting this week.

In the Mid-Continent the Oklahoma-Kansas division of the Mid-Continent Oil and Gas Association has offered a plan to reduce unnecessary wildcatting through co-operative restriction under the supervision of the State Corporation Commission in Oklahoma and concert of operators in Kansas, with the hope that similar action may be taken by the Texas and Louisiana-Arkansas operators.

Overproduction and the unprofitable markets resulting from it have also led to reports of efforts to arrive at some sort of understanding regarding Venezuelan production, further evidencing the worldwide recognition of the necessity for co-operation in stabilizing the industry.

Yet less than a year ago when co-operation was being urged as the one hope for the industry there were many who firmly believed it never could be effected. It is to the credit of the industry that it could be convinced, even if against its will, and that, having proved co-operation effective, it is today practically unanimously behind it. Ways and means may still prove a difficulty but on the principle there is general agreement.

The present situation is epitomized in the statement by President E. W. Clark of the American Petroleum Institute that "the oil industry is engaged in a co-operative effort to solve its own problem and in my opinion is entering a new era. Conditions and practices under which the industry has been operating have gone, never to return."

The official publication of the Standard Oil Company of New Jersey says "There is a growing recognition by the industry of the desirability, if not the extreme necessity, of co-operation on the production of crude. It is only through co-operative action that the industry can become and remain prosperous and, while many of us in the industry may find it difficult to depart from our individualistic notions of doing our own business in our own way, we are beginning to see that the individual as well as the general benefit can best be secured by united action."

Co-operation eased us through the stress of Seminole. It would, as stated, have eased us more had it been adopted sooner. Co-operation is inducing California to think and act in terms of the whole industry instead of merely local interests. The co-operation idea is making headway in West Texas as the situation generally is becoming better understood. The old days of "devil take the hindmost," of selfish, reckless exploitation regardless of the effect on the industry at large, are gone, as President Clark says, never to return. They cannot return, because they would instantly bring the power of the Government into the industry to compel it to do what it failed to carry through.

In launching the movement for co-operation last April The Oil and Gas Journal was moved to declare that "the canker at the heart of the oil industry is excessive competition, due largely to overproduction." The progress of the past twelve months has justified that diagnosis. It has convinced the most reluctant.

But co-operation for conservation in large producing districts has had other and more lasting effects than mere modification of the existing output. It has taught the industry the advantages of co-operative effort in conservation in preventing excess production. It is easily recognized that unlimited drilling in some areas defeats the object of conservation in others and that the stabilization of the industry depends upon a general understanding and practice of co-operation all along the line.

The more widely co-operation is extended and the benefits of it are broadcast throughout the industry the better it will be all around. The advantages obtained through co-operation in the producing branch will be impressed upon the manufacturing division and the marketing branch.

Many of the problems which have been considered impossible of solution under selfish competitive conditions will be found easy of solution when tackled in a co-operative spirit. Other industries have found it so, and there is no reason why the oil business should be an exception.

Competition that leads only to losses must eventually be succeeded by co-operation for the benefit of all.

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Furnace Oil Business Will Expand

Oil Burner Manufacturers Believe Turning Point in New Industry Has Been Reached. Must Have Satisfactory Oils

By C. O. Willson

CHICAGO, Apr. 7.—The oil burner industry has reached the "turning point" in its brief history and the future will witness a more rapid expansion than has the past.

The foregoing is indicative of the spirit which was everywhere apparent in the fifth annual convention of the American Oil Burner Association, held at the Hotel Stevens with approximately 1,500 registrations. The industry, it is predicted based on the record to date, will manufacture and sell this year more burners than during any previous 12-month period in its history.

This optimism regarding the future comes after a year ending January 1, 1928, in which the oil burner business experienced a noticeable slump compared to the previous year. Improved burners, better selling methods and service, coupled with a campaign of education directed to the buying public, are believed to be remedying the conditions responsible for the slow up last year. The oil business can look forward to a substantial increase in its furnace distillate sales next year with the additional insurance that the demand will continue to increase in future years.

The writer has endeavored to glean from the proceedings of the three-day convention and through interviews with representative leaders of the oil burner industry, such material as is of particular interest to the refiners and marketers of distillates used as fuel in the oil burners. The convention meetings naturally were largely devoted to the manufacturing and sales problems of the oil burner industry rather than in discussion of problems relating to fuels.

Adequate Supply

The main interest of the oil burner industry in the oil business at this time is the assurance of an adequate supply of fuel for their burners. Concerns engaged in the sale of the burners state that the most serious misunderstanding they have to overcome in the public mind is the fear of an oil shortage in which they would not be able to get the necessary fuel except at prohibitive prices.

Although this particular fear may appear ridiculous to an industry which has been flooded with an excess of raw material for over a year, it is a very real problem to the burner manufacturers and sellers. Aided by various reports regarding an oil shortage—in some cases emanating from governmental sources—the competitors of the oil burners have been able to cool the ardor of many prospective oil burner buyers. For that reason those in attendance at the convention welcomed the assurance of B. L. Majewski, vice president and general sales manager of the Shaffer Oil & Refining Co., that they can go ahead and expand their sales as rapidly as possible with the assurance that the oil industry will furnish the necessary fuel.

Present Distillate Market

Statistics relative to the oil burner industry vary so widely that it is difficult to obtain any figures which are generally accepted. In that connection an attempt is now being made to have the Bureau of Mines or some other government agency gather these data which will include the actual consumption of furnace distillate.

According to the figures available here, there are about 600,000 oil burners in use in United States and Canada at this time. This includes the domestic and commercial types but not the industrial installations. The latter type, of course, includes all the burners using the heavier grade fuel oils which for the most part are a residuum obtained in the operation of refineries and are not a refined product.

The great majority of the 600,000 burners using refined distillates are of the domestic type. The commercial types are the largest users of distillates but up to the present time this phase of the business is a minor factor due to the relatively few installations. It is estimated that the average domestic burner uses 2,500 gallons or 60 bbls. during the burning season. Taking this average as a basis for the domestic burner requirements and making a liberal allowance for those of the commercial type and an estimate of 36,000,000 bbls. is arrived as the furnace oil requirements at this time.

It is impossible to estimate accurately at this time just how many new burners will be built and installed this year. As previously explained the new business so far this year has been highly encouraging. Several manufacturers reported a 50 per cent or better increase over the same period last year. Most burner installations, however, are made during the summer and fall months and that business for this year is yet to be determined. The manufacturers are hoping for a minimum of 150,000 new installations. If this materializes it will mean an additional 9,000,000-bbl. distillate demand during the coming year.

Distillate Specifications

Specifications for furnace distillates were not discussed at the convention except for some extemporaneous remarks made by the representative of one oil company. The association has recently announced some tentative grades and specifications. This report was published in the April 5 issue of The Oil and Gas Journal.

These specifications are now being studied by refiners and distributors of oil and it is probable that recommendations will be made asking for minor changes. From the statements made at the meetings of the convention here it is apparent that many refiners will have to change their past attitude if they are going to share in this distillate market. As expressed by one burner manufacturer "there can be no compromise in regard to whether an oil distillate is good or bad. It must be good."

No Compromise

Poor grades of distillates, coupled with imperfect burners, it was stated have done more to give the oil burner industry a black eye than all other problems combined. This obviously goes to the very crux of the whole oil burner situation and the one thing upon which the future depends.

The oil burner has given complete sat-

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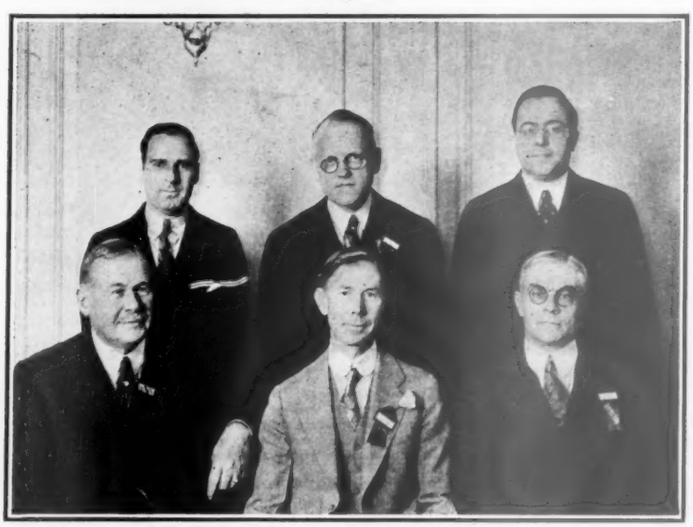
ELECT WESTERN MANUFACTURER TO HEAD OIL BURNER ASSOCIATION

CHICAGO, Apr. 5.—J. C. Johnson, president of the S. T. Johnson Co. of Oakland, Calif., was elected president of the American Oil Burner Association for the ensuing year at a meeting of the directors of the association. E. P. Bailey, president of the National Aeroil Co. of Philadelphia, was elected chairman of the board of directors. The other officers chosen are: Executive secretary, Leod D. Becker, New York; vice presidents, George P. Kittle, president Aeroil Co., Newark, N. J.; Edward M. Flischmann, president, May Oil Burner Co., Baltimore; Walter F. Tant, president, Silent Automatic Oil Burner Co., Detroit, and George Bulloch, president, Caloroil Corp., New York.

The executive committee was increased from three to five members and now consists of President J. C. Johnson, Executive-Secretary Leod D. Becker, Lionel L. Jacobs, the outgoing president and Messrs. Flischmann and Bailey as above.



Officers of the American Oil Burner Association: Edward M. Fleischmann, vice president; Walter F. Tant, vice president, and Leod D. Becker, executive secretary. Lower row, left to right: George Bulloch, vice president; J. C. Johnson, president, and E. P. Bailey, chairman, board of directors.

Late News from the Field

OKLAHOMA

The Greater Seminole Field produced 283,964 bbls. for the 24 hours ending 7 a. m., Tuesday of this week. The pools' output was as follows:

Little River	40,074
Bowlegs	75,787
Earlsboro	95,679
Seminole	55,055
Searight	17,369
Total (from 1,084 wells)	283,964

The Magnolia Petroleum Co.'s No. 1 Hyde, NW cor. SE NW, Section 13-9-5, was shot with 10 quarts in sand 4,396-4,418 feet, and made 687 bbls. in 18 hours by flow.

The two producing wells south of the Little River Pool are showing small change in output, a slight variation being registered when the wells drop off, and then regain their loss. The Independent Oil & Gas Co. and Highway Oil & Refining Co.'s No. 1 Harris, SW cor. NW NW, Section 23-7-6, is making 2,619 bbls.; and Snowden & McSweeney's No. 1 Tiger, NW cor. NW, Section 13-7-6, is making 2,766 bbls.

The 10 test wells in the area south of Little River are reaching the stage where calculations may be made. The Prairie Oil & Gas Co.'s No. 1 Hutchins, SW cor. SE SE, Section 12-7-6, the farthest northeast well, is running a string of 6-inch casing in the Viola lime at 4,130 feet. This well had the Sylvan shale 4,085 feet ,and the Viola lime topped at 4,116 feet. The Reiter-Foster Oil Co.'s No. 1 Bunyard, SE cor. NW SW, Section 14-7-6, is rigging up standard tools at 3,862 feet. T. B. Slick's No. 1 Williams, NE cor. SE NE, Section 15-7-6, is drilling at 2,325 feet. Outside of the test wells, E. W. Whitney, drilling southeast of the pool, has reached 2,550 feet in his No. 1 Harjo, NE cor. NW NE, Section 25-7-6. It now seems that the majority of the test wells will carry the rotary hole down to the Viola lime, instead of running it in the Hunton lime. The Reiter-Foster well is an exception to this rule.

In the Pearson-St. Louis area of Pottawatomie County, the McCulloch Oil Co. and Mid-Continent Petroleum Corp.'s No. 1 Smith, NW cor. SE, Section 25-7-4, is producing 1,079 bbls. on the swab. The total depth of this well is unchanged, 4,179½ feet. North of this well, the Gypsy Oil Co. and Westheimer & Daube's No. 2 Leclaire, NW cor. SW NE, Section 23-7-4, is making 1,352 bbls. from the Simpson sand. This well has evidently settled down to an output which varies from 1,200 to 1,375 bbls.

In the same region, the Seminole Petroleum Co.'s No. 1 Brown, NW cor. NE NE, Section 22-7-4, is making 110 bbls. from the Hunton lime with a total depth of 3,975 feet.

In the Allen Field of Seminole-Pontotoc-Hughes Counties, the Mid-Continent Petroleum Corp.'s No. 3 Fleet, C E half NE NW SE, Section 7-5-8, had sand 2,455-98 feet with 1,800 feet of water in the bottom. The well was plugged back to 2,468 feet, and is swabbing 40 bbls. daily. No. 4 Fleet, NE cor. SE SE, Section 7-5-8, had some gas in sand 2,561-64 feet, and is flowing 45 bbls. daily while drilling deeper at 2,720 feet.

In Pottawatomie County, the Amerada Petroleum Corp.'s No. 1 Gravel, SW cor. SE NE, Section 1-8-4, had the top of the Simpson sand 4,390 feet, and is drilling in this formation at 4,417 feet with nothing showing.

KANSAS

In northern Cowley County, the Lewis Production Co.'s No. 1 Pierce, SE cor. NW SE, Section 30-31-6, had the Bartlesville sand 2,905-35 feet, a shale break

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Hendricks Soars to 224,912-Bbl. Peak

Two Wildcats Drilling in the North Extension of Field. Interest in Pecos County Test North of Fort Stockton

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 9.—A summary of activities in West Texas current developments resolves itself principally to Winkler County although there were several noteworthy developments from other counties.

Hendricks, to borrow a term from the followers of the squared circle, seems to have a vast reserve of follow up punches in handing jolts to the industry. During the past week it soared to a new peak in daily average production which in turn gave the daily average of West Texas a 16,000-bbl. boost.

The field averaged 208,270 bbls. last week and is making around 220,000 bbls. daily at present. Texas Railroad Commission has adopted an order designed to curb the field's production and will hold a protest meeting Friday of this week. After the meeting the order, intact or amended, is expected to be put in force. It is planned to divide the field into 40-acre units and equally divide the pipe line outlet among the units. All existing contracts are to be recognized and owners of fractional tracts will be allowed to produce their fractional share of a 40-acre unit.

Hendricks went to a new peak during the 24-hour period ending 7 a. m., April 6, when it made 224,912 bbls.

A summary of operations in Hendricks show a total of 144 operations and locations. Of this number 76 are wells drilling, 12 wells shut down, 4 wells shut in, 10 wells drilling in the pay and making oil; 19 rigs building or standing, and 23 locations. Ten new wells in the field completed during the past seven days had an average production of 2,601 bbls. and a combined initial production of 26,011 bbls.

Co-operation of Operators

An improvement in the situation in Winkler is seen in the volunteer co-operation of operators in the north part of the field to curtail excessive drilling. The plan proposed by E. A. Landreth calling for 440-foot locations from the north or south lines of an 80-acre lease, has been put into effect and will cut down a number of locations.

The big danger is in the north part of the field recently extended by gusher wells. Two wildcats in that section of the field are drilling about three-quarters of a mile north of production. If they are successful, and no one expects them to be failures, they will cause another outbreak in drilling. The wells are Murchison & Cranfill Brothers' No. 1-D, and Cranfill & Reynolds' No. 1-D, both in Section 33, Block 26.

Further on north, and in Lea County, New Mexico, The Texas Company's No. 1 Rhoades, which has been shut in for several months, is reported to have blown out its connections. It is believed the sand cut the connections and caused them to break. How serious it is and whether the well has again been brought under control has not been learned. West of that well Marland Oil Co.'s No. 1 Eaves is running 8-inch at 2,842 feet.

Turman & Maxwell Sale

Late in the week, L. C. Turman, of Turman & Maxwell, returned from a fortnight trip to California where he closed a deal with the California Co. for the sale of Turman & Maxwell's 80-acre lease in the E half of the NE of Section 29, Block B-5, in the Hendricks Pool, and approximately 3,500 acres of wildcat leases in Ector County for a consideration of $750,000. California Co. took over operations of the lease April 9, and Humble Pipe Line Co. connected to the wells and will take 5,000 bbls. daily. The deal called for $500,000 cash, $150,000 in negotiable securities and $100,000 in oil.

The Hendricks lease has six wells on it that produced 5,569 bbls. daily last week. One well is drilling in the pay and the other well is drilling at around 2,800 feet. Turman & Maxwell had around 300,000 bbls. of crude stored on the lease which was included in the purchase. California Co. is building a 10,000-bbl. capacity refinery at El Paso and has let contracts for the construction of an 8-inch line from El Paso to Hendricks. California Co. has production in Yates and in Mitchell County and a refinery at Colorado City. Turman & Maxwell have other acreage in wildcat territories of Winkler County.

Big Well in North

Another big well was brought in in the north part of the Hendricks Field when Atlantic and Collett's No. 2 Hendricks-F, in the NW cor. Section 40, Block 26, topped the pay at 2,752 feet and flowed 360 bbls. the first hour through a quarter-inch choke at the gate.

On the eastern side of the field, Independent Oil & Gas Co.'s No. 1 McCabe, Section 36, Block B-5, has resumed drilling and is drilling at 2,790 feet. Sunday the well made 55 bbls. The gas and oil found at 2,640-2,723 feet was bradenheaded and the increase in oil indicates that another pay has been encountered. Northeast of that well Amerada Petroleum Corp.'s No. 1 Walton, SW cor. NW. Section 48, Block 26, is drilling at 2,480 feet making 20,000,000 feet of gas. Southern Crude Co.'s offset is fishing at 2,705 feet.

Pecos County Test

Rowan & Tong's No. 1 Scharff & Blackman, Section 4, Block 9, H.&G.N. Survey, about 18 miles north of Fort Stockton in Pecos County, is being followed with keen interest. It is reported to have topped the lime at 1,712 feet. The well has an elevation of 2,435 feet. It had a show of oil at 1,645-57 feet and enough gas to blow the tools 50 feet up in the hole .Monday the well was drilling at 1,975 feet, or, 263 feet in the lime without any change. Eleven miles northeast of Fort Stockton, Kirby Petroleum Co.'s No. 1 University, Section 36, Block 24, got sulphur water at 1,310-55 feet and is to be abandoned.

Back in the three-corner area around the intersection of Crane, Ward and Pecos Counties, more gloom was cast when Lockhart and associates' No. 1 Treanor, Section 28, Block 1, H.&T.C. Survey, was shut down at 2,149 feet after getting 1½ bailers of sulphur water per hour at 2,147 feet. Michaelson & Talbot's No. 1 River Bed, is reported to have been drilled to the contract depth at 2,000 feet and shut down.

Culberson County was in the limelight during the week as a result of a showing of Deep Rock Oil Co.'s No. 2 Kloh & Rumsey, Section 21, Block B-59, T.&P. Survey. It had a show of oil in white tight sand at 1,556-60 feet. The well tested 5 bbls. of 38 gravity oil. It is to be drilled on down to 1,700 feet and will probably be plugged back and shot.

Showing in Reeves County

In Reeves County, David R. Thompson's No. 1 Eddins, about the center of the west line of Section 9, Block C-1, Public School lands, had a showing of sweet oil in the second sand at 5,337-44 feet. The well bailed about 7 gallons of 35 gravity oil. The first sand was encountered at 5,322-27 feet. The total depth of the hole is 5,367 feet. There has been little change in the other deep tests in West Texas. Texon Oil & Land Co.'s No. 1-B University, in the Big Lake Pool of Regan County, is shut down at 8,000 feet while the drilling line is being changed.

Sulphur water spelled failure for two more Regan County wells. Roxana Petroleum Corp.'s No. 1 Sawyer Cattle Co., Section 15, Block A, R. Casey Survey, had a hole full of sulphur water at 3,339-47 feet and was abandoned. The Texas Company's No. 3 J. D. Sugg, about the center of Section 165, Block 2, had a hole full of sulphur water at 3,005-15 feet and is shut down.

Humble Pipe Line Co. is building its second line from the Hendricks Pool in Winkler County. The new line will be an 8-inch carrier from the field to Monahans of the Texas & Pacific Railroad and it will parallel the Humble's first line into Hendricks from McCamey as far as Monahans. Shell Pipe Line Corp. is increasing the capacity of its line from Hendricks to McCamey.

WEST TEXAS COMPLETIONS
Week Ending April 7

Brewster County

Cowden & Bowser's No. 1 Jackson and Harmon, C N half Section 1, Block 331, was junked at 130 feet.

Crockett County

V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Section 4, Block 2, I.&G.N. Survey, has been temporarily abandoned at 2,110 feet.

Howard County

Coyle-Concord Oil Co.'s No. 5 Dora Roberts was drilled to a total depth of 1,871 feet and after a 20-quart shot at 1,841-63 feet the well swabbed 60 bbls. Godley Oil Co.'s No. 2 A. J. Hooks was shot with 40 quarts at 1,820-37 feet and swabbed 25 bbls. Tate, Weekley & Tubbs' No. 3 Dora Roberts swabbed 30 bbls. from each of the following sands after a 50-quart shot—1,628-50, 1,680-90 and 1,853-73 feet.

Pecos County

Mid-Kansas and Transcontinental Oil Co 's No. 13 Smith-Taylor, topped the pay at 1,155 feet and bottomed at 1,265 feet and made 842 bbls. the first hour and 800 bbls. the second hour. Same company's No. 14 Smith-Taylor, Section 33, Block 194, topped the pay at 1,185 feet and bottomed at 1,350 feet and made 2,094 bbls. in 6 hours through a 4-inch line. California Co.'s No. 10 I. G. Yates, lease 1, found the pay at 1,053-55 feet and made 966 bbls. in 20 minutes.

The following wells were abandoned: Mid-Kansas and Transcontinental Oil Cos. have abandoned the location for their No. 14 I. G. Yates-A. Same companies' No. 6 I. G. Yates-C temporarily abandoned the rig. Same companies have abandoned the location for their No. 10 I. G. Yates-C. Gibson Oil Corp.'s No. 1 R. R. Russell, Section 69, Block 3, C C.S.D.&R.G.N.G. Survey, was dry and abandoned at 3,010 feet.

Reagan County

Big Lake Oil Co.'s No. 129 University topped the pay at 2,857 feet and drilled to a total depth of 2,917 feet. The well was plugged back to 2,910 feet and had an initial production of 385 bbls. on the pump. Same company's No. 137 University found the pay at 2,940-70 feet and pumped 85 bbls. the first 18 hours. Roxana Petroleum Corp.'s No. 1 Sawyer Cattle Co., Section 15, Block A, R. Casey Survey, had a hole full of sulphur water at 3,347 feet and has been abandoned.

Schleicher County

Beavers & Leath's No. 1 J A. and W. T. Whitten, C NW Section 35, Block 11, T.O. Survey, was temporarily abandoned at 400 feet.

Winkler County

Atlantic Oil Producing Co.'s No. 4 Ida Hendricks-D, NE SW NW Section 29, Block B-5, found the pay at 2,760-87 feet and made 400 bbls. per hour. Humble Oil & Refining Co.'s No. 7 Grisham-Hunter found the pay at 2,907-24 feet and had an initial production of 4,412

(Continued on Page 151)

WILDCAT OPERATIONS IN WEST TEXAS

Week ended April 7, 1928

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock Oil Co.'s No. 1 W. J. Harris, C SE Sec. 12, Blk. A-46, Public School Land, elev. 3,167 ft.	Top salt, 1,690 ft; total depth, 2,860 ft; preparing to set 6-inch casing.
BORDEN COUNTY	
Dixon Creek Oil Co.'s No. 1 Clayton & Johnson	Top lime 2,410 ft.; shut down 2,240 ft; repairing rig.
Marland Oil Co.'s No. 1 G. E. McDavid, C SW Sec. 156, Blk. 25, H.&T.C. Sur., elev. 2,310 ft.	Top salt 1,250 ft; setting 8-in. casing 2,220 ft.
Marland Oil Co.'s No. 1 Alexander Murphy, C SW Sec. 66, Blk. 25, H.&T.C. Sur., (3,250-ft. test)	Location.
BREWSTER COUNTY	
Cowden & Bowser's No. 1 Jackson & Harmon, C N half Sec. 1, Blk. 331	Skidding rig.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 162, Blk. 9, G.E.&S.A. Sur.	Crooked hole 1,003 ft.
Reese & White's No. 1 Kimbale, C NE Sec. 204, Blk. 9, G.H.&S.A. Sur.	Shut down 1,659 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,700 ft.
Wilcox & Anderson's No. 1 Gage, Sec. 8, Blk. 300, T.C. R.R. Sur.	Show gas 2,004-2,010 ft; shut down 2,010 ft.
COKE COUNTY	
W. H. Brown et al's No. 1 W. L. Foster, SE cor. Sec. 142, Blk. 2, H.&T.C. Sur., elev. 2,222 ft.	Shut down 3,600 ft.
Lipan Oil Co.'s No. 1 S. M. Conner, Sec. 71, Blk. 2, H.& T.C. Sur.	Show oil 1,224-34 ft.; shut down 3,375 ft.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Shut down 2,739 ft.
CONCHO COUNTY	
C. R. Dutton and Hughes Drlg. Co.'s No. 1 W. O. Shultz, Sec. 127, Blk. 72, T.&N.O.R.R. Sur.	Shut down 1,000 ft.
The Exploration Co.'s No. 1 Hartgrove, Blk. 240, J. Schouch Sur., elev. 1,718 ft.	Set 10-in. 760 ft.; shut down 940 ft.
Sartain Oil Co.'s No. 1 Evridge	Spudded and shut down.
CRANE COUNTY	
Gulf Prod. Co.'s No. 4 W. N. Waddell, C of SW SW Sec. 3, Blk. B-25	Building road.
Gulf Prod. Co.'s No. 49 J. T. McElroy, Sec. 201, Blk. F, C.C.S.D.&R.G.N.G.R.R. Sur.	Top salt 1,115 ft; drlg. 2,475 ft.
Lockhart et al's No. 1 M. M. Treanor, Sec. 28, Blk. 1, H.&T.C. Sur.	Shut down 2,000 ft.
CROCKETT COUNTY	
Anderson & Williams' No. 1 University, SE cor. NW NW SE Sec. 19, Blk. 47	Rig.
V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I.&G.N. Sur.	Shut down 2,110 ft.

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New Pool Is Opened Near Cross Cut

Brown County, Texas, Well Comes in Making 757 Bbls. 44.1 Gravity. Another Good Completion in Matthews Pool

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 9.—Cranfill & Reynolds, Dallas, Tex., operators who have been unusually successful in recent months, made another strike and featured the field report from North Texas during the week. Those operators' No. 1 Eubanks in the northwest part of the Robert Mitchell Survey, Section 141, opened a new pool about a mile south of the Cross Cut Pool in Brown County when it came in making 757 bbls. of 44.1 gravity oil from pay at 1,210-25 feet.

The well is 2,520 feet from the north line and 150 feet from the east line of the J. B. Eubanks tract in the Mitchell Survey and is producing from the Cross Cut sand. The discoverers of the new pool have made locations for the south, southeast and west offsets.

No. 1 Eubanks is surrounded by dry holes the nearest being about three-eighths of a mile away. The well is one of the largest completed in Brown County in recent months and the only recent wells to come in with a larger initial production are some in the Hickman and Blake Pools. Considerable activity in that new area is expected to follow the wildcat strike.

Aside from the handful of completions on the inside locations of various Brown County pools there was little other activity reported.

Matthews Pool Completion

The Matthews Pool in Shackelford County, opened several weeks ago by Tannehill Oil Co., got another good completion when the pool discoverers completed the second well in the pool. No. 1 Matthews, in the southwest part of Section 27, swabbed 400 bbls. the first 12 hours from sand at 1,144-62 feet. The discovery well, one location to the east, made 700 bbls. initially. It is now making around 225 bbls. daily.

Lewis Production Co. is to spud in on a well in Section 55 on the Matthews some time during the current week. Atlantic Oil Producing Co. purchased an 80 in Section 55 on the Matthews ranch and will probably drill in the near future.

Coleman County Drilling

Two areas were being watched by Coleman County operators. John W. Choate's No. 1 Stevens, 4,850 feet from the north line and 7,100 feet from the west line of the Coleman County School lands is believed to be in the Fry sand at 2,100-03 feet and swabbed 20 bbls. in a test during the week. After the showing it was discovered the well was drilled on the Roxana Petroleum Corp.'s lease. The well is about 3 miles southeast of Coleman.

Broderick and Calvert's No 1. Buck, a south offset to Gwinnup and Bradstreet's north extensioner to the Morris Pool, 6 miles northeast of Coleman, is drilling around 1,800 feet. The well should reach the pay around 2,000 feet. J. M. Gillette who has an interest in a block in the Morris Pool with the Eastland Oil Co. and associates, discoverers of the pool, sold his interest to his brother, Carl Gillette of Tulsa. Two producers on the Eastland company's holdings are making around 300 bbls. daily. One of the two dry holes has been drilled below 3,000 feet and will probably be drilled to the black lime.

Ranger District Work

One of the features from the Ranger district during the week was the finding of a shallow oil show in Tulsa Drilling Co.'s No. 1 Kirkpatrick, in the J. Henderson Survey No. 1,187. The well picked up a good showing of 39.8 gravity oil from sand at 401-04 feet. It is about 4 miles northwest of the Lohn shallow production.

It was reported late in the week that Cranfill & Reynolds purchased a half interest in the well and the 80 on which it was drilled and a similar interest in three offsetting 80-acre tracts to the east, south and west. If the well makes a commercial producer Cranfill & Reynolds are to take over operation of the well and in the event it does not the test is to be drilled to 1,600 feet. Consideration was not learned.

Wichita Falls Area

The Loving shallow area in Young County furnished most of the excitement in the Wichita Falls district although other areas in that district reported a good number of completions.

Kleiner and West's No. 1 Langston in Section 1,491, T.E.L. Survey, Young County, went on record as being the best producer thus far completed in the shallow pool in the northeastern part of the county. The well made 300 bbls. from the shallow sand topped at 532 feet and when penetrated 24 feet it produced a little better than 525 bbls. The other completions in that pool were much smaller in initial production.

Several hundred barrels of flush production was added to Archer County as a result of several completions in the Gohlke Pool during the week. Sixteen new locations were reported from that area during the week and indications are that part of Archer County will continue to be briskly active for several weeks. In all there were 46 locations made in the Wichita Falls district. This increase of work is general throughout Texas as the drilling permits issued by the State have climbed steadily from 527 in January to 777 in March.

Empire Gas & Fuel Co.'s No. 1 J. Parkey, in Section 4, Block 11, A.T.N. C.L. Survey, Archer County, in semiwildcat territory, is estimated to be good for 40 bbls. in sand at 1,709 feet. Completion of this well is expected to bring about considerable drilling on close in acreage.

Most of the activity and completions in Wichita and Wilbarger Counties was confined to the proven areas.

Panhandle Activity

Panhandle completed the week without reporting anything of a sensational nature although activities in Gray County continue to hold the interest of Panhandle operators and several developments of interest were reported.

The area in the central part of Block 26 was coming in for attention as the result of showings in two wells. Danciger Oil & Refining Co.'s No. 1 Morse, SE cor. NE SW, Section 2, Block 46, H.&G.N. Survey, is making 15,000,000 feet of gas from 2,365-2,456 feet and has 150 feet of oil in the hole from 2,469 feet. The well is shut in waiting the erection of storage.

McCauley's No. 1 Morse, SE NE, Section 3, Block 26, a half mile northwest, is making 125 bbls. daily from granite wash at 2,386-2,535 feet and may be drilled deeper.

It was announced during the week that Godfrey L. Cabot, Inc., would construct its second carbon black plant in the Panhandle. The new plant will be built near Pampa and is reported to be a plant that will represent an investment of $500,000.

Production of the three districts in North Texas showed an increase of 168 bbls. in daily average over the previous week's report. Despite the gains in Gray County, Panhandle showed a daily average loss of 1,325 bbls. This was offset, however, by an 852-bbl. gain in the Ranger district and a 641-bbl. gain in the Wichita Falls district.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending April 7, 1928

ARMSTRONG COUNTY

Company, Well, Farm, Name, Section and Block— Remarks—

United Oil & Trust Co.'s No. 1 J. P. Reck, Sec. 162, Blk. 4, H.&G.N. Sur. ..... T.D., 3,780 ft; R.U. fish. tools.

BRISCOE COUNTY

C. S. Rice's No. 1 J. C. Anderson, SE cor. NW NW, Sec. 22, Blk. B-3, B.S.&F. Sur. ..... S. D., 1,620 ft.

CARSON COUNTY

Amarillo Oil Co.'s No. 1 E. S. Polling, C NE of N 80 acres of NE, Sec. 13, Blk. Y-2, B.&B. ..... Drlg., 1,260 ft.

Amatex Dev. Co.'s No. 1 E. S. Polling, Sec. 22, Blk. 2-Y ..... T. A., 2,110 ft.

Empire G. & F. Co.'s No. 1 J. C. Noel, C SW, Sec. 41, Blk. 4, I.&G.N. Sur. ..... Rig.

Empire G. & F. Co.'s No. 1 E. W. Sheridan, C NE, Sec. 243, Blk. B-2, H.&G.N. Sur. ..... Set 20-in. csg., 215 ft; drlg., 960 ft.

Gulf Production Co.'s No. 1 W. E. Cobb, SE cor. S half NE, Sec. 202, Blk. 3, I.&G.N. Sur. ..... Cmtd. 12½-in. csg., 187 ft.

Marston Oil Co.'s No. 1 J. L. Noel ..... Fish., 3,000 ft.

Skelly Oil Co.'s No. 2 E. Schafer, NE SW SW, Sec. 35, Blk. 4, I.&G.N. Sur. ..... Set 10-in. csg., 1,077 ft; drlg., 2,000 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 73, Blk. M-17, B.S.&F. Sur. ..... Rig blown down.

Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ..... S.D., 510 ft. for csg.

CHILDRESS COUNTY

Hoover & Calloway's No. 1 O. L. Tucker, Sec. 736, Haggard Sur. ..... Spudded and S.D.

C. L. Sloane et al's No. 1 B. P. Smith, Sur. 49, F. P. Knott lands ..... Set 6-in., 2,902 ft; drlg., 4,005 ft.

CottLE COUNTY

Exploration Co.'s No. 1 Richards ..... Spudded and S. D.

Exploration Co.'s No. 4 Matador Land & Cattle Co., C, Sec. 46, J. H. Stephens Sur. ..... Rig on ground.

DALLAM COUNTY

Wood Bros. et al's No. 1 Capitol Synd., Sec. 19, Blk. 17 ..... Hole full wtr., 4,007-4,127 ft; S. D., 4,385 ft.

Marland Oil Co.'s No. 1 A. M. James, C SW W ½ Sec. 21, S. H. McElreath Sur. ..... U.R. 5-in., 3,860 ft; 500 ft. wtr. in hole; T.D., 3,865 ft.

Marland Oil Co. et al's No. 1 Capitol Synd., Sec. 36, Blk. 18, Capitol Synd. land. ..... S.D., 3,500 ft.

DONLEY COUNTY

A. T. Drlg. Co.'s No. 1 F. E. Harrington, Sec. 39, Blk. 3-C ..... 1,200 ft. wtr., 3,115-22 ft.; show gas, 3,140-60 ft.; dry G.W., 3,200-93 ft; cmt. 5-in., 3,510 ft; T.D., 3,517 ft.

Martin & Watson's No. 1 W. J. Ball, Sec. 22, Blk. E, D.&P.R.R. Sur. ..... Cellar.

FLOYD COUNTY

Explin. Co.'s No. 1 S. H. Boone, C. C. H. Johnson Sur. ..... Spudded and S.D.

Explin. Co.'s No. 1 Land & Cattle Co. ..... Drlg., 2,700 ft.

Hoffer Oil Corp.'s No. 1 Nelson ..... Spudded and S.D.

GRAY COUNTY

Archer Blake's No. 1 Turneaux, SW cor. Sec. 111, Blk. B-2 ..... S.D., 255 ft.

Bigge et al's No. 1 Morse, SW cor. Sec. 3, Blk. 26, H. &G.N. Sur. ..... 8-in csg. set, 1,875 ft; drlg. shale, 2,075 ft.

Cole O. & G. Co.'s (was Magdalene Oil Co.'s) No. 1 J. E. Williams, Sec. 17, Blk. 1 ..... S.D., 3,860 ft.

Danciger O. & R. Co.'s No. 7 W. Jackson, Sec. 55, Blk. B-2, H.&G.N. Sur. ..... 3,000 ft. T.D.; making 5,000,000 ft. gas from 2,779-3,000 ft. and 5 bbls. oil; stdzng., 3,000 ft.

Danciger O. & R. Co.'s No. 9 W. Jackson, NW cor. NE NW Sec. 55, Blk. B-2 ..... Junked hole, 2,880 ft; skidded 50 ft. N; drlg., 400 ft.

Danciger O. & R. Co.'s No. 1 W. Crank, SW cor. NW, Sec. 162, Blk. 3, I.&G.N. Sur. ..... Cmt. 8-in. csg., 2,518 ft.

Danciger O. & R. Co.'s No. 1 A. Chapman, SW cor. NW, Sec. 7, Blk. 26, H.&G.N. Sur. ..... U.R. 8¼-in. csg., 1,510 ft.; 15,000,000 ft. gas, 2,215-2,300 ft; show dead oil, 2,400-2,530 ft; S.D., 2,850 ft.

Danciger O. & R. Co.'s No. 1 C. W. Bradford, NE cor. SE, Sec. 123, Blk. B-2, H.&G.N. Sur. ..... 1,000,000 ft. gas, 2,410-30 ft; drlg., G.W., 2,741 ft; 9,000,000 ft. gas.

Danciger Oil Co.'s No. 1 J. S. Morse, SE cor. NE SW, Sec. 2, Blk. 26, H.&G.N. ..... Drlg., 2,456 ft; 15,000,000 ft. gas, 2,365-2,456 ft; 150 ft. oil in hole; S.D., 2,469 ft. for storage.

Danciger et al's No. 1 R. Smith, SW cor. Sec. 149, Blk. 3 ..... Location.

Dillard et al's No. 1 Furney, NE cor. SE, Sec. 202, Blk. B-2, H.&G.N. Sur. ..... Rig.

Donley Gray Oil Co.'s No. 1 J. W. Gordon, Sec. 79, Blk. 3. Wtr., 3,380 ft. and 3,430 ft. show oil; H.F.W., 3,650 ft.; T.D., 3,870 ft.; U.R. 6-in. csg., 3,852 ft.; S.D., 4,152 ft.

Delmar Oil Co.'s No. 1 F. Foster, NW cor. SW, Sec. 55, Blk. B-2, H.&G.N. Sur. ..... Drlg., 700 ft.

Edwards et al's No. 1 E. J. Case, NE cor. Sec. 182, Blk. B-2, H.&G.N. Sur. ..... 70,000,000 ft. gas, 2,512-2,630 ft.; top G.W., 3,034 ft; 2,000 ft. oil in hole; fish., 3,232 ft.

Empire G. & F. Co.'s No. 1 S. A. Cobb, NW cor. NE, Sec. 64, Blk. 25, H.&G.N. Sur. ..... Drlg., 2,855 ft; show oil, 2,510 and 2,637 ft.

Empire G. & F. Co.'s No. 1 T. Cobb-"B," C NW, Sec. 178, Blk. 3, I.&G.N. Sur. ..... Drlg., 2,080 ft.

Empire G. & F. Co.'s No. 1 A. J. Dauer, NW SE SE, Sec. 226, Blk. B-2, H.&G.N. Sur. ..... Set 12-in., 1,055 ft; drlg., 2,035 ft.

Empire G. & F. Co.'s No. 1 Holmes, C NE, Sec. 179, Blk. 3, I.&G.N. Sur. ..... Building rig.

Eslick et al's No. 1 Mrs. J. A. Hopkins, NW cor. W 80 acres of SW¼, Sur. 84, H.&T.C., Blk. B-2 ..... Set 8-in., 2,208 ft; drlg., 2,880 ft; 6,000,000 ft. gas, 2,654-2,795 ft.

Gibson Oil Corp.'s No. 9 J. B. Bowers, NE cor. Sec. 92, Blk. B-2, H.&G.W. Sur. ..... Fish. for 5-inch. csg., 3,733 ft.

Gibson Oil Co.'s No. 1 G. Pierce, SE cor. Sec. 149, Blk. B-2, H.&G.N. Sur. ..... Rigging.

(Continued on Page 84)

PANHANDLE COMPLETIONS

Week Ending April 8, 1928

Gray County

Gibson Oil Corp.'s No. 3 J. B. Bowers, Section 92, Block B-2, averaged 30 bbls. per hour from the granite wash at 3,029-3,110 feet and 3,160-3,203 feet. Magnolia Petroleum Co.'s No. 1 J. J. Wall, NE cor. Section 162, Block 3, I.&G.N. Survey, was drilled to the total depth of 3,368

(Continued on Page 150)

Crack and Flash

If a high grade crude oil yielding 50% gasoline from skimming were available it would command a high premium, probably a prohibitive one and the gasoline would likely be a bad knocker

The Dubbs Process with Flashing System yields 50% or more premium gasoline from gas oil or topped crude About 47% is accounted for as distillate and premium fuel oil The remaining 3% is gas for operating the process and a very small amount of coke

The Flashing System with the Dubbs Process has made this possible

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Seminole to New Low, Then Regains

Fluctuations Due to Cleaning Out or Equipment Changes. Tests South of Little River Reaching Interesting Depths

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

With a gradual application of the "lid" to all new drilling operations, the Oklahoma fields are becoming rather quiet. The Greater Seminole area registered further declines during the past week, and made a new low figure of 278,305 bbls. on Thursday. The output regained its lost ground, and on Sunday and Monday produced 284,789 bbls. and 286,433 bbls. respectively. The variation of the production is caused by the number of wells which are temporarily off production for the purpose of cleaning out, or making changes in equipment. With over 300 producing leases in the field, a variation of 10 bbls. per lease will in itself make quite a change in the picture.

There were several completions in the Little River Pool which added slightly to the output, the best well being W. B. Pine's No. 1 Hoyeche, SE cor. SW SE, Section 26-8-6, which is swabbing 800 bbls. daily from the Wilcox sand 4,104-15 feet. This well has extended the pool a quarter mile to the north.

The majority of wells in the Greater Seminole area are making their production by means of the air lift system. The manner of production of the Seminole wells and the drilling activity is given below:

	Little River	Semi-nole	Sear-right	Bow-legs	Earls-boro
Locations	0	0	1	2	3
Rigs	4	0	1	9	10
Drilling above:					
2,000 ft.	7	1	1	4	0
3,099 ft.	12	0	0	2	3
3,700 ft.	6	0	0	5	4
Below 3,700	7	1	1	14	11
Total	36	2	4	36	31
Method of Prod.—					
Air lift	57	96	23	195	102
Pump	30	185	16	63	96
Flowing	7	7	22	7	17
Swabbing	9	11	0	15	40
Wells off	4	10	9	32	28
Total	107	309	70	312	283
Wells making water	36	116	24	53	153

Summary—

Wells on air	473
Wells pumping	390
Wells flowing	60
Wells swabbing	75
Wells off	83
Wells making water	382

There is an increase in the number of wells making water, but a careful inspection of the records show that it is not an alarming intrusion, and is chiefly confined to edge wells which are located on the poorer parts of the structures.

In the method of production, there has been a check of the practice of changing wells from the air lift back to the pump, and the figures shown above, are practically constant with the method of production one week ago.

South of Little River

The 10 test wells being drilled south of the Little River Pool are now reaching the interesting depths. The drilling custom has been changed in these wells, and instead of landing the string of 8-inch casing on top of the Hunton lime, it is being carried down and set on top of the Viola lime. The owners are evidently inclined to pass up any Hunton lime production for the chances at Wilcox oil. The Gypsy Oil Co.'s No. 1 Canard, SE cor. NE NE, Section 22-7-6, a direct offset to the Independent Oil & Gas Co. and Highway Oil Refining Co.'s No. 1 Harris in Section 23-7-6, is reported running high, and has set the 8-inch casing on top of the Viola at 4,120 feet. The Texas Company and Independent Oil & Gas Co.'s No. 1 Hotulke, NW cor. SW NW, Section 23-7-6, is also running high, and is reported in the Viola at 4,090 feet. According to geological calculation, this latter well is running over 100 feet higher than the Harris well, and while highs and lows in this particular region have been demonstrated as having small influence upon production, it is at least encouraging for the region southeast of the Harris well. To the southwest of the Harris well, the failure of the Barnsdall Oil Co.'s No. 1 Hotulka, SE cor. NW SE, Section 22-7-6, which found water many months ago, exploded the relation of the highs and lows to production, for it was the highest well of this region.

All ten of the test wells should be very close to the Wilcox sand in two weeks, allowing the normal time for cementing the string of casing, and allowing the cement to set. They are the key wells to the future of Oklahoma conditions in oil for some time at least, and should they prove dry, as many believe a large percentage of them will be, the big noise from Seminole will be lost in the distance.

Pearson-St. Louis

The Pearson-St. Louis area of Pottawatomie County is still exceptionally interesting with Mid-Continent Petroleum Corp. and McCulloch Oil Co's No. 1 Smith, NW cor. SE Section 25-7-4, the most interesting well of the area. This well has showed a variance in output, and a rather peculiar performance. It made a peak production of 2,400 bbls. when it had been drilled in three weeks. It is producing from the Simpson sand, a formation which has caused unlimited doubt regarding area of the pool, and the companies not owning leases in this region have been slow to enter it. The output of the Mid-Continent-McCulloch well declined from its peak down to 1,050 bbls., and was making some water. When the decrease was in evidence, the well was drilled one foot deeper, to a total depth of 4,179½ feet. It started flowing 65 bbls. an hour, and held that rate of output for six hours, after which it stopped flowing. When the tools were run in to agitate the well, the flow again started, and after three days the water is apparently exhausted. The well is now swabbing 1,250 bbls.

Kay County

Dewey, Mitchell and others made location and cellar for No. 1 Root, SE cor. NE NW SE, Section 32-28-1w, for a Wilcox sand test. Martin and others' No. 1 Buessing, C NE NW, Section 9-27-1, is spudding for shallow gas. Wentz Oil Corp 's No. 1 Williams, NE cor. SE NE, Section 7-27-2, a shallow gas test, is spudding.

Wilson Gas Co.'s No. 1 Vaughn, CEL W half SW SE, Section 20-29-1, gauged 2,000,000 feet of gas from sand at 1,460-64 feet. Rogers and others' No. 1 Glenny, C NW SW, Section 33-27-1w, Blackwell Field, has been completed for 400,000 feet of gas in sand at 802-35 feet. Martin and others' No 1 Quade, SE cor. SW, Section 4-27-1, had gas sand at 739-55 feet and is good for 5,295,000 feet. Wentz Oil Corp.'s No. 1 Vickery, SW cor. NW NW, Section 8-27-2, is dry and abandoned at 556 feet. Rogers and others' No. 1 Roberts, C NE NE, Section 5-26-1w, has been abandoned at 850 feet.

Lincoln County

Wilcox Oil & Gas Co.'s No. 1 Skeets, NE cor. Section 15-15-5, has been completed for 2,500,000 feet of gas in sand at 3,614-24 feet.

Noble County

George Miller and others made location for No. 1 Howe, C NW SE, Section 11-24-3, for a deep test.

Osage County

Kewanee Oil & Gas Co. is erecting the rigs for nine wells on the recently acquired lease on the SW Section 21-27-6, Burbank Pool. The locations are as follows: No. 1, NW cor. SW; No 2, NE cor. NW SW; No. 3, NW cor. NE SW; No. 4, SE cor. NW SW; No. 5, SW cor. NE SW; No. 6, NW cor. SE SW; No. 7, NE cor. SE SW; No. 8, SW cor. SE SW; No. 9, SE cor. SW. Phillips Petroleum Co. is building the rigs for No. 1 SW cor. SE; No. 2, SE cor. SW SE; No. 3, NW cor. SW SE, Section 21-27-6, Burbank Pool. Devonian Oil Co. has the rig up and tools in for No. 1, SE cor. SW NE, Section 5-24-9. Commercial Drilling Co. made location for No. 4, NE cor. SW SW, Section 22-21-12. Sand Springs Home made location for No. 1, NW cor. NE SE, Section 2-20-10.

Peters Petroleum Co.'s No. 10, NE cor. SE NW, Section 17-27-6, made 158 bbls. after a shot of 120 quarts in Burbank sand at 2,912-76 feet. Kewanee Oil & Gas Co.'s No. 9, SE cor. NW NE, Section 28-27-6, made 660 bbls. naturally from Burbank sand at 2,893-77 feet. Carter Oil Co.'s No. 8, NW cor. SE SE, Section 3-26-6, was completed for 170 bbls in Burbank sand at 2,734-95 feet. Indian Territory Illuminating Oil Co.'s No. 388, NW cor. SE, Section 13-26-10, is dry and abandoned at 2,210 feet.

The Prairie Oil & Gas Co.'s No. 1, SE cor. NE, Section 11-24-6, made 10 bbls. in Bartlesville sand at 2,690-94 feet. No. 4, SW cor. SE SW NW, Section 21-27-6, has been completed for 500 bbls. in sand at 2,867-2,948 feet.

Payne County

Magnolia Petroleum Co.'s No. 1 Jennings, SW cor. NW, Section 10-18-5, was completed for 2,500,000 feet of gas in sand at 2,094-2,103 feet.

Carter County

Hall & Bristow's rig is under construction for No. 1 Miller, SW cor. NW NW, Section 29-1s-3w. Boring and others' rig is being built for No. 3 Walker, SW cor. SE NW, Section 10-4s-2w.

Schermerhorn and others' No. 2 Crockett, SE cor. NE, Section 22-1s-3w, has been completed for 90 bbls. in a series of sands at 2,419 feet to 2,700 feet. Magnolia Petroleum Co.'s No. 2 Choens, NE cor. SE SW, Section 33-1s-3w, made a 40-bbl. well in sand at 2,610 feet to 3,742 feet. No. 2 C. E. Brooks, SW cor. NE, Section 11-2s-3w, is making 55 bbls. from sands at 3,530-40 feet and 3,540-47 feet.

Pawnee County

J. A. Turner and others' No. 1 Est, SE cor. NE, Section 30-20-9, made 21 bbls. after a shot in Layton sand at 1,098-1,122 feet.

Creek County

Magnolia Petroleum Co. has the rig on the ground for No. 31 Coker, NE cor. NW SW NW, Section 16-18-7. Shaffer Oil & Refining Co.'s No. 4 L. Tiger, SW cor. NW, Section 17-17-7, Drumright Pool, is rigging up to deepen. H. J. Haubert and others moved a machine out for No 3 Bruner, SE cor. SW NW SW, Section 24-18-11. S. J. Smith and others moved a machine to the location for No. 1 Unallotted, SW cor. NW SE, Section 33-18-11. Devonian Oil Co.'s No. 2 Unallotted, C SE NW, Section 4-18-12, is spudding. Madden & Morgan have the rig on the ground for No. 1 A. Farmer, SW cor. NW SE, Section 13-15-9.

Steinberger & Smith's No. 1 Smiley, C NW SE, Section 19-19-8, is dry and abandoned at 3,326 feet. J. H. Markham, Jr.'s, No. 1-A Beasley, NE cor. Section 19-17-7, is pumping 110 bbls. from sand at 2,794-2,809 feet after having swabbed 318 bbls. The Prairie Oil & Gas Co.'s No. 1 Brooks, NW cor. NW SE, Section 26-18-7, has been completed for 10,170,000 feet of gas in Tucker sand at 2,938-87 feet. Olean Petroleum Co.'s No. 1 Lewis, SE cor. NW, Section 10-15-8, is dry and abandoned at 3,837 feet. J. A. Hull Co.'s No. 3 M. Walker, SE cor. SW SW, Section 21-18-9, is making 4,000,000 feet of gas from Bartlesville sand at 2,566-68 feet. Roach and others' No 1 Strip, SW cor. NE, Section 35-18-9, made 15 bbls.

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

GRANT COUNTY

Otstot Development Co.'s No. 1 Snyder, NE cor. NE Sec. 6-28-3w ..... Shut down 4,518 ft.
J. V. Bailey and others' No. 1 Maddox, C SE Sec. 18-27-5w ..... Estimated 2,000,000 gas, spray oil 4,835-42 ft.; cleaning out.
Thraves and others' No. 1 C. D. Fuss, SW cor. NW NW Sec. 30-27-4w ..... Abandoned 1,230 ft.
Burns & Beasley's No. 1 Bolsterson, SW cor. NW SW Sec. 24-27-3w ..... Rig abandoned.
Brasil & Moses' No. 1 Goutier, SW cor. NW Sec. 34-26-4w ..... Shut down for pipe 650 ft.
Lambert and others' No. 1 Tabor, SE cor. NE SE Sec. 23-26-3w ..... Abandoned after spudding.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w ..... Fishing 5,640 ft.

HARPER COUNTY

Kopisch Oil Co.'s No. 1 Johnson, NE cor. SE Sec. 24-27-21w ..... Rigged up and shut down.
Hoffer Oil's No. 1 Cooper, NW cor. SE SE Sec. 12-25-22w ..... Shut down 4,130 ft.

WOODS COUNTY

Sooner State Oil Co.'s No. 1 Marcum, C SW Sec. 20-27-15w ..... Spudded and shut down.
Victor Oil Co.'s No. 1 Buskirk, SW cor. SE Sec. 10-26-15w ..... Hole full water, 775-800 ft.; shut down 900 ft.
McCray Oil & Gas Co.'s No. 1 Whitney, NE cor. NW SE Sec. 19-24-14w ..... Shut down 1,880 ft.

KAY COUNTY

Boucher and others' No. 1 Cooper, SE cor. SE Sec. 23-27-2w ..... Drilling 2,510 ft.
Ponca Lee Oil's No. 1 McNeil, NW cor. NE Sec. 32-26-2e ..... Shut down 2,795 ft.
Tonkawa Development Co.'s No. 1 McDaniels, SE cor. SE Sec. 15-25-1w ..... Fishing 4,638 ft.
Corley and others' No. 1 Williams, SE cor. NE SW Sec. 7-21-1w ..... Shut down for casing 1,930 ft.

WOODWARD COUNTY

Otstot Development Co.'s No. 1 Simmons, SE cor. SE Sec. 32-24-17w ..... Shut down for pipe 1,430 ft.
Wight & Wahl's No. 1 Williams, C NW Sec. 16-23-20w ..... Rig.
Randau & Mooney's No. 1 Parker, SE cor. NE NW Sec. 4-23-16w ..... Shut down 1,092 ft.
Sharon Oil Co.'s No. 1 Elmore, SW cor. SW Sec. 25-21-21w ..... Shut down 2,772 ft.
Burgoyne Brothers' No. 1 Barnes, SW cor. SE NE Sec. 15-21-19w ..... Drilling 870 ft.
Wight & Wahl's No. 1 James, C NW Sec. 16-23-20w ..... Rig.

GARFIELD COUNTY

E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Hole full water 4,650 ft., shut down 4,720 ft.
Failing et al's No. 1 Gorusch, SE cor. SE Sec. 14-24-3w ..... Swedging pipe 4,767 ft.

(Continued on Page 113)

TRANSIT PUMPS

Figure No. 1700 is a very popular type in the smaller refineries.

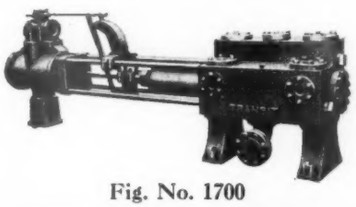

Fig. No. 1700

Our name TRANSIT, is a guarantee now just as it has always been for the past forty years.

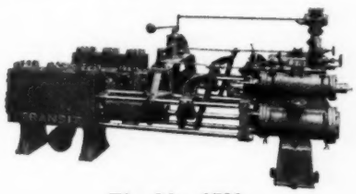

Fig. No. 1791

Real, honest-to-goodness, forged steel cylinders on all types.

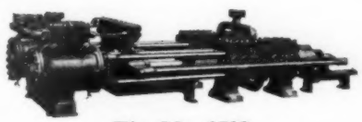

Fig. No. 1733

Heavy, cast iron, flanged steam cylinder piping and real brass globe valves.

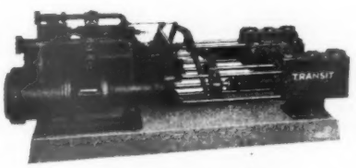

Fig. No. 1571

Oil in exact quantities is delivered per minute, per hour and per day by TRANSIT Hot Oil PUMPS.

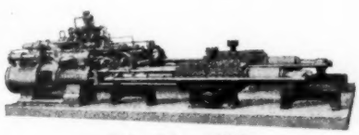

Fig. No. 1805

The discharge from any of these pumps is steady and constant.

Fig. No. 1792

Our hot oil pumps are absolutely safe in operation, both to life and property.

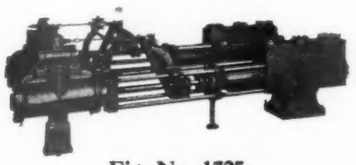

Fig. No. 1725

Illustrated descriptive matter on any type or Fig. No. furnished promptly.

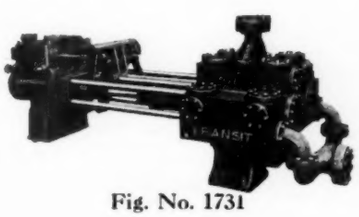

Fig. No. 1731

Long stroke pumps are long lived.

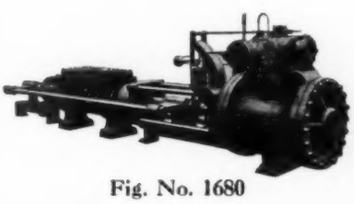

Fig. No. 1680

Representatives

FRICK-REID SUPPLY COMPANY
Tulsa, Okla., or any store.

ASSOCIATED SUPPLY COMPANY
Los Angeles, San Francisco, Bakersfield, Fellows

E. L. WILSON HARDWARE CO.
Beaumont, Texas.

NATIONAL TRANSIT
Pump & Machine Co.
Oil City, Pa.

DISTRICT OFFICES

NEW YORK PHILADELPHIA PITTSBURGH
CLEVELAND HOUSTON TULSA LOS ANGELES

Representatives

THE GLOBE SUPPLY & MACHINERY CO.
New Orleans, La.

F. C. RICHMOND MACHINERY CO.
Salt Lake City, Utah.

MORTON McL. DUKEHART & CO.
Baltimore, Md.

REEVES & SKINNER MACHINERY CO.
St. Louis, Mo.

from Dutcher sand at 2,761-75 feet. S. J. Smith and others' No. 5 Fife, NW cor. SE, Section 4-17-11, is dry and abandoned at 1,554 feet.

Stephens County

Magnolia Petroleum Co. has built the rig for No. 5 M Green, SE cor. NW, Section 13-1s-14w. Max Westheimer is erecting the rig for No. 1 G. Martin, NE cor. Section 13-1s-4w.

Wirt Franklin Petroleum Corp.'s No. 1 Crews, SE cor. NE SE, Section 12-1s-4w, is dry and abandoned at 4,318 feet. Magnolia Petroleum Co.'s No. 1 Morton, SE cor. NE NE, Section 23-1s-4w, has been abandoned at 4,010 feet.

Tulsa County

Caldwell & Page's No. 1 Hodge, SW cor. SE SE, Section 10-19-11, is dry and abandoned at 1,854 feet. Mid-Co Oil Co.'s No. 1 Boone, NE cor. NW NW, Section 24-18-13, has been shot with 10 quarts and completed for 10 bbls. in sand at 1,542-84 feet. J. F. McGuigan's No. 2, Island, SW cor. SE SE, Section 24-18-14, made 35 bbls. from sand at 1,275-1,305 feet.

Grady County

Simpson & Fell are building the rig for No. 1 Long, SW cor. SE SE, Section 36-5-7w. Wirt Franklin Corp. has the rig up for No. 1 Long, NE cor. SW NW, Section 1-4-7w. No. 1 Cox, NW cor. NE SW, Section 17-4-6w, is rigging up rotary tools. No. 2 Fobb, CWL NW SW, Section 12-2s-8w, is cementing surface pipe.

Nichols and others' No. 1-A Spencer, CNL SE NW, Section 25-5-8w, has been abandoned at 3,206 feet. Oklahoma Natural Gas Corp.'s No. 4 Glover, NE cor. SE NE, Section 27-5-8w, cemented 8-inch pipe at 2,002 feet, drilled to 2,170 feet and was completed for 30,000,000 feet of gas. J. J. Hall's No. 1 Wood, SW cor. NW, Section 12-4-8w, has been abandoned at 3,345 feet.

Cotton County

Cullum and others' No. 1 Chambers, NE cor. SW, Section 35-1s-10w, is rigging up rotary tools.

Hughes County

Itle, Sutton & Hart's No. 1 McGee, CNL NW NW, Section 27-9-10, is rigging up rotary tools. Indian Territory Illuminating Oil Co. is erecting the rig for No. 2 Bingham, SW cor. NE SW, Section 8-5-8, Allen Pool.

Indian Territory Illuminating Oil Co.'s No. 1 Bingham, NW cor. SE SW, Section 8-5-8, flowed 237 bbls. through tubing from sand at 2,441-2,671 feet. T. B. Slick's No. 1 Harris, SW cor. SE NE, Section 8-5-8, is pumping 45 bbls. from sand at 2,478-88 feet.

Logan County

Blackwell Oil & Gas Co. and others made location for No. 1 Moore, NW cor. SE, Section 28-18-4w, Lovell area.

Okfuskee County

Henry & Avers' No. 3 Buckley, SW cor. SE SW SW, Section 12-12-11, is spudding. W. L. Umbrum has the rig up for No. 1 Hill, SE cor. NE NW SE, Section 11-10-11. Mid-Continent Petroleum Corp.'s No. 1 Morris, NE cor. SW NW, Section 29-10-9, is being deepened from 3,901 feet and now underreaming 5-inch casing at 3,932 feet. The Prairie Oil & Gas Co.'s No. 1 Gray, SW cor. Section 19-11-7, has been abandoned at 4,831 feet.

Jefferson County

Beck and others made location for No. 1 Ryan, NW cor. SE NE, Section 23-6s-6w. Heydrick and others' No. 2 Spring, NW cor. NE SW, Section 24-6s-6w, is drilling at 650 feet. J. M. Luke made location for No. 1 Black, C NE SE, Section 20-6s-5w.

Heydrick and others' No. 1 Spring, NW cor. SW SW, Section 24-6s-6w, had sand at 1,728-31 feet and has pumped a maximum of 230 bbls. in 24 hours.

Pontotoc County

Superior Oil Co. has the rig up for No. 1 Roper "A," NE cor. NW, Section 32-5-5. Westheimer & Daube's No. 1 Millner, SE cor. Section 8-5-8, Allen Pool, is rigging up to deepen from 2,428 feet. Homaokla Oil Co. has the cellar dug for No. 1 Ritchie, NE cor. SW SE, Section 1-4-7. Wirt Franklin Petroleum Corp. has the rig on the ground for No. 1 Brown, SE cor. NW, Section 2-4-8.

Westheimer & Daube's No. 1 Millner "A," SE cor. Section 8-5-8, is pumping 8 bbls. from sand at 793-811 feet. Tidal Oil Co.'s No. 5 McCall, CWL NW NW, Section 27-5-8, Allen Pool, is dry and abandoned at 935 feet. No. 6 McCall, NW cor. Section 27-5-8, is dry and abandoned at 990 feet. Gillespie and others' No. 1 Fleming, SW cor. SE, Section 12-5-4, is pumping 25 bbls. from sand at 2,545-65 feet. LaSalle and others' No. 3 Copeland, CNL SW, Section 28-5-5, drilled to 2,611 feet, plugged back to 2,460 feet and is pumping 35 bbls. from the Hunton lime topped at 2,230 feet. Gillette & Krueger's No. 2 Patterson, NW cor. SW SW, Section 25-5-6, made a gas well from sand at 1,983-84 feet, producing 8,000,000 feet.

Homaokla Oil Co.'s No. 9 McCall, NE cor. Section 17-5-8, Allen Pool, flowed 200 bbls. from sand at 2,755-69 feet. Winkler & McQueen's No. 1 Rose, NE cor. SE NE, Section 17-5-8, is dry and abandoned at 2,963 feet. Homaokla Oil Co.'s No. 2 Berry, NE cor. SE, Section 19-5-8, swabbed 60 bbls. from sand at 2,530-96 feet and is now pumping 10 bbls. Louisiana Oil Refining Corp.'s No. 10 Perry, NW cor. Section 20-5-8, has been shut in for 3,000,000 feet of gas. Ada Cement Co.'s No. 1 Mathews, C SW NW, Section 24-4-7, is pumping 60 bbls. from sand at 1,790-92 feet.

Pottawatomie County

Independent Oil & Gas Co. and Darby Petroleum Co. made location for No. 3 Wallace, SW cor. Section 14-7-4, St. Louis Pool. Magnolia Petroleum Co. made location for No. 3 J. M. Robbins, SE cor. Section 15-7-4. Twin State Oil Co. made location for No. 1 Brown, NE cor. SW NE, Section 22-7-4. Independent Oil & Gas Co. and Darby Petroleum Co. made location for No. 1 Carson, NW cor. Section 23-7-4. Magnolia Petroleum Co. has the rig on the ground for No. 1 Bullock, NE cor. SE SW, Section 17-7-5. Magnolia Petroleum Co.'s No. 1 School Land No. 74, SW cor. NE, Section 36-7-3, Pearson Pool, is pumuing 7 bbls. daily from sand 4,210-4,355 feet.

Seminole County

Shaffer and others' rig is up for No. 1 Jones, SW cor. NE, Section 18-10-7. Magnolia Petroleum Co. is building the rig to deepen No. 5 Simpson, SE cor. NW SE, Section 10-9-5.

Pure Oil Co.'s No. 1 Jonah, NW cor. NE, Section 15-9-7, is dry and abandoned at 3,510 feet after plugging back from 3,516 feet. Continental Oil Co.'s No. 4 Cosar, SW cor. NE NW, Section 36-8-6, Little River Pool, made 600 bbls. from Wilcox sand at 4,232-41 feet. Indian Territory Illuminating Oil Co.'s No. 1 Marshal, NW cor. SW, Section 32-7-7, has been abandoned at 4,824 feet. Independent Oil & Gas Co. and White Eagle Oil Co.'s No. 3 Davis, SE cor. SW SE, Section 2-7-6, Little River Pool, has been completed for 910 bbls. in Wilcox sand at 4,248-64 feet.

Stephens County

American Pipe Line Co.'s No. 2 Bond, CWL NW SW, Section 7-2s-7w, is rigging up rotary tools. Petroleum Producers Co. has erected the rig for No. 1 Brown, NW cor. SW NW, Section 7-2s-7w.

Snodgrass Oil Co.'s No. 5 Malernee, NE cor. SE NE NW, Section 34-1s-8w, is making 125 bbls. from sand at 1,667-92 feet. Pace and others' No. 1 Wilson, SE cor. NE, Section 12-2s-8w, is flowing 200 bbls. from sand at 1,548-54 feet. American Pipe Line Co.'s No. 1 Brown, SW cor. NW, Section 7-2s-7w, is swabbing 230 bbls. from sands at 1,531-48 feet and 1,548-54 feet.

Muskogee County

M. Duga and others' No. 1 A. Robeson, SE cor. NE SE, Section 36-15-18, is spudding. Minnie Reed's No. 1 Wade, NE cor. SE SE SW, Section 31-15-19, is rigging. Reese and others' No. 1 E. Parnell, SW cor. SE SE, Section 31-15-19, is spudding. H. L. Jolly's No. 2 Cherry, C NE NW, Section 2-14-18, is rigging up. J. L. Dixon and others' No. 5, NE cor. NW NE NW, Section 12-14-18, is spudding. Ark-Add Oil Co. has a machine at the location for No. 4 Muskogee Townsite, Lot 34, Block 16. Ragland & Curly's No. 2, Lot 18, Block 16, Muskogee Townsite Pool, is drilling at 75 feet. S. Threlkeld and others' No. 1 Cobb, SW cor. NW NW SW, Section 6-14-19, is drilling at 92 feet.

Walton Oil Co.'s No. 2 B. T. Kell, NE cor. SE SW, Section 6-14-19, is drilling at 270 feet. No. 3 B. T. Kell, SE cor. NE SE SW, Section 6-14-19, is drilling at 490 feet. O. F. Butler's No. 1, Lot 48, Block 3, Section 6-14-19, is drilling at 240 feet. J. L. Casey and others' machine is at the location for No. 1 W. Smith, SW cor. NW SW NW, Section 6-14-19. Olean Petroleum Co.'s No. 1, Lot 20, Block 16, Section 6-14-19, is spudding. Ransom and others' No. 2 Cobb, CSL SW SW, Section 33-14-19, is spudding.

Jolly-Ogg Oil Co.'s No. 1 D. Serrell, NE cor. SE NE, Section 21-15-15, is dry and abandoned at 2,135 feet. Vise & Heflin's No. 2 Townsend, SW cor. NW, Section 30-15-15, is dry and abandoned at 2,091 feet. Denton & Marshall's No. 3 Jefferson, NE cor. SE, Section 32-15-15, has been abandoned at 2,067 feet. C. A. Lovelace, trustee's, No. 1 Cobb, SE cor. NE SE, Section 1-14-18, has been abandoned at 939 feet. No. 2 R. Cherry, CEL SW NW, Section 2-14-18, is dry and abandoned at 1,220 feet. Hale Ford Oil Co.'s No. 5 Clark, SW cor. NW SE, Section 6-14-19, has been completed for 60 bbls. in sand at 503-28 feet.

J. H. Lowerre's No. 1, Lot 17, Block 16, Muskogee Townsite Pool, Section 6-14-19, made 120 bbls. from sand at 510-28 feet. Meek & Ederington's No. 1, Lot 37, Block 7, Section 6-14-19, is dry and abandoned at 558 feet. J. L. Powell's No. 1, Lot 13, Block 16, Section 6-14-19, made 50 bbls. from sand at 507-23 feet. Ragland & Curly's No. 1, Lot 47, Block 13, Section 6-14-19, is dry and abandoned in sand at 505-25 feet. M. Sells' No. 1, Lot 44, Block 16, Section 6-14-19, had sand at 514-35 feet and made 72 bbls. Simpson and others' No. 1, Lot 33, Block 16, Section 6-14-19, was completed for 750,000 feet of gas from sand at 502-26 feet. No. 2, Lot 14, Block 13,

(Continued on Page 81)

KANSAS WILDCATS

BARBER COUNTY

Barbara Oil Co.'s No. 1 Blunk, C NE NW Sec. 20-34-13w.. Underreaming 2,760 ft.
G. W. Basom's No. 1 Grant, SW cor. SE SW, Sec. 13-31-3 ..... Drilling 789 ft.
Otstot et al's No. 1 Barlow, SE cor. SE Sec. 22-33-3w ..... Shut down 1,860 ft.
Rolland and others' No. 1 Pickens, NE cor. NW NE Sec. 27-30-14w ..... Shut down 3,196 ft.
J. K. D. Shaffer's No. 1 Carter, C SE SE Sec. 2-33-13w.. Fishing 3,980 ft.
J. K. D. Shaffer's No. 1 Boggs, SW cor. NE SW Sec. 19-33-12w ..... Drilling 5,200 ft.
Skelly Oil Co. and others No. 1 Winter, CE half Sec. 17-31-12w ..... Fishing 3,550 ft.

BARTON COUNTY

Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w ..... Shut down 3,346 ft.
Huffine and others' No. 1 Smith, NE cor. SE NW Sec. 17-19-11w ..... Shut down 5,130 ft.
McJilton and others' No. 1 Evanston, SE cor. NW Sec. 34-17-11w ..... Rig.

BUTLER COUNTY

Cross & Frank's No. 1 Bryson, NE cor. NE Sec. 26-27-5.. Drilling 2,050 ft.
Empire Gas & Fuel Co.'s No. 1 Semisch, NW cor. SE NW Sec. 4-33-7 ..... Dry and abandoned 2,732 ft.
La Robb and others' No. 1 Bronsenger, NE cor. SW Sec. 24-27-3 ..... Rig.
Joe Liggett's No. 1 Travender, NW cor. SE Sec. 24-23-6 Drilling 2,530 ft.
White Eagle Oil & Refining Co.'s No. 1 Dixon, NE cor. SE SW Sec. 1-27-6 ..... Hole full of water 2,089-2,105 ft.; shut down.
M. F. Wilcox Oil & Gas Co.'s No. 1 Littell, NE cor. SE NW Sec. 21-29-4 ..... Collapsed casing 1,453 ft.; shut down.

(Continued on Page 117)

GOOD WELLS COMPLETED IN LOST SPRINGS AND GREENWOOD, KANSAS

By J. L. Dwyer
Staff Correspondent, Kansas Fields.

There were two good wells completed in Kansas last week; one in the Lost Springs district, and one in the heavy oil district of Greenwood County. At Lost Springs, Loomis & Youker's No. 1 Bozington, SE cor NE NW Section 15-17-4, is good for 200 bbls. daily in chat found 2,332-2,384 feet. This well extends the producing region slightly on the northwest. In the same area, Skow Brothers and Ritchie's No. 1 Melter, C NE SE Section 20-18-4, is declared dry and will be plugged from a depth of 2,408 feet. This well had a good showing of oil, but had too much water.

In the Climax district of Greenwood County, the Mohawk Oil Co.'s No. 2 Cross, NE cor. SW NW Section 7-27-11, is making 200 bbls. daily from sand 1,875-1,885 feet. This oil tested 29 degrees gravity.

The Independent Oil & Gas Co. has completed a well in the Lost Springs Pool. It is No. 1 Mowrer, SE cor. SW SE Section 15-17-4, and is making 50 bbls. daily from chat 2,419-2,465 feet.

The interesting well of The Texas Company in McPherson County is still swabbing 5 bbls. of oil and 4 bbls. of water from a total depth of 2,378 feet. This well is No. 2 Chinberg, NW cor. NE NE Section 32-18-2w, and the owners have not decided whether the well will be deepened.

Western Kansas furnishes a region which is rather active from a leasing standpoint. There are two magnetometer parties reported working in western Russell and southern Osborne Counties. A large block of leases is reported to be under accumulation in southern Russell County, near the Barton County line. This block will be core drilled, according to reports. Another block is reported to be under accumulation in Township 19-17w, Rush County.

Lost Springs Production

Production by leases of the Lost Springs Pool, giving the daily average output for the week ending April 7, follows:

Company and leases—	Wells	Prod.
Phillips Pet. Co.:		
Wells Rezineck	1	34
T. Rezineck	2	141
Peterson	3	181
McCoy	2	114
Mowrer	1	11
Frank	1	14
Prairie Oil & Gas Co.:		
Mowrer	1	124
Rezineck	1	86
Larioux and others:		
Barnes	1	84
Shoup	1	39
Peterson	1	50
Merrillat	1	142
Fowler	1	34
Reynolds and others:		
Netrourer	1	48
Independent Oil & Gas Co.:		
Bevan	1	71
Mowrer	1	58
Sinclair Oil & Gas Co.:		
Bevens	1	96
Braden & McClure:		
Smith	1	20
Harwood & Winters:		
Ucker	1	10
Skelly Oil Co.:		
Rezineck	1	31
Youker & Loomis:		
Bozington	1	182
Ramsey Brothers:		
Balby	1	100
Ward and others:		
Layton	1	8
Total	27	1,672

Churchill Pool

Production by companies of the

(Continued on Page 138)

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GUIBERSON

BETTER BE SAFE THAN SORRY

New Pay Sand Found at Champagnolle

Pure Oil Co. Gets Well Flowing 1,800 Bbls. 35.5 Gravity Crude in 18 Hours. Cotton Valley Well Holds Up

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas.

SHREVEPORT, La., Apr. 9.—Developments in Cotton Valley deep sand remained the center of attraction in this territory for the second week since the Ohio Oil Co.'s two wells in the new 4,600-foot horizon came in, one as a huge gasser and the other as a 3,000-bbl. well whose capabilities are as yet not known, as it has never flowed wide open. Discovery of a new producing horizon of undoubted large potentialities in Cotton Valley two weeks ago was duplicated this week in the Champagnolle district of Union County, Arkansas, where the Pure Oil Co. completed a well flowing 1,800 bbls in 20 hours from a new deeper pay. With these developments in Cotton Valley and Champagnolle, the atmosphere in Shreveport and El Dorado has undergone a complete change.

Ohio Oil Co.'s No. 38 Bodcaw, Section 15-21-10, that started all the new excitement in Cotton Valley, was opened for the first time April 3 flowing through a 1-inch choke and separator. At the end of 24 hours it had made 3,595 bbls. with about 3,000,000 feet of gas from 12 feet of sand, total depth 4,683 feet, and it was decided to hook up another separator. This was accomplished April 7 and at the end of the first hour after opening through the two it had made 180 bbls. or at the rate of 4,320 bbls. per day. The second flow line is 3-inch and at the time of this report the gate had not been opened wide. Consequently it is not known at this writing just what the well will do flowing wide open. The last gravity test showed the oil 49.4 Baume, previous tests showing 50.9. Standard Oil Co. of Louisiana is taking the oil at $1.70 per barrel, and with a half dozen other wells nearing the new pay as many more are to be started within the next few days. Two of these wells under way at present are due for completion by April 20.

"Gasoline" Well

While the Bodcaw well was being opened and gauged, Ohio's No. 2 Crichton, Section 21-21-10, a 60-000,000-foot gasser in the new horizon at 4,672 feet with the bottom 8 feet in the sand, was being connected to Magnolia Petroleum Co.'s gathering system feeding their gasoline plant. Magnolia is taking 20,000,000 to 25,000,000 feet per day and the remainder is going to waste as the owners are fearful of a blowout or crater should they close in the well, but to take care of this excess production Ohio is moving its Pine Island gasoline plant to Cotton Valley and Magnolia is arranging to enlarge its plant. Gas from the well tests 1.5 gallons of gasoline per 1,000 feet and because the well has been making around 2,500 gallons of gasoline per day while blowing it has become known as "Cotton Valley's gasoline well." Ohio is at present taking 10,000,000 feet per day, making a pull of 23,000,000 feet under which the well is showing 800 pounds pressure.

Pure Oil Co.'s well in Champagnolle, No. 1 Gregory, Section 10-17-14, was completed April 4 flowing at the rate of 2,200 bbls. daily of 35.5-gravity oil from 12 feet of sand, total depth 3,153 feet, and production is being taken by Root Refineries, Inc., which has a 6-inch line to the field. At this depth, the well is the deepest producer in Arkansas, corresponding in that respect to the Ohio's well in Cotton Valley. The new horizon, believed by some to be the Trinity, is approximately 100 feet below the depth (surface elevation) of the original wells in Champagnolle and 400 feet deeper than the Garrett-Modisett's No. 1 Gregory—shallow sand discovery well in Champagnolle, a short distance north. Two miles east of it, Simrall and others tested salt water in what is believed to be the same sand at 3,179 feet after drilling 10 feet deeper following a marked showing of oil and gas on drill stem test of four feet of sand. The Pure well was producing through a 1-inch choke making one-half of 1 per cent sand, but no water. As in the case of Cotton Valley, several wells that have been failures, or small producers in the upper horizons, will be deepened to the new pay and current activity indicates considerable new drilling in the immediate future. One of these old wells, Oilwell Corp. and Magna Production Co.'s No. 1 J. Dumas in Section 11-17-14, was last reported in the red shale at 3,163 feet and was expected a completion before the end of the week. It tested 10,000,000 feet of gas and a small amount of oil at 3,069 feet and was shut down at 3,099 feet after a salt water test at that depth until the Pure well began making signs of being a producer.

May Have Been Freak Well

Behavior of Dixie Oil Co.'s No. 91 Dillon in Section 14-21-15, Pine Island district of Caddo Parish, rather confirms the opinion of those who regarded it as a freak well. Reported last week as a completion making 2,270 bbls. of 42-gravity oil from 2,702 feet, it quit flowing after two days and is now awaiting orders. It is understood the company will not try to bring it back to production but will drill on down to the 3,600 or 3,900-foot horizon.

Richland Parish's one completion, Moody-Seagraves' No. 1-C Sartor in Section 17-16-6, surrounded by production, was notable chiefly for its size, gauging 53,738,000 feet of gas, total depth 2,450 feet. The best news coming out of Richland during the week was that Natural Gas & Fuel Co. has begun pumping thin mud and water into the crater of No. 1 Thompson, Section 21-21-6, through No. 3-C Thompson, a north offset drilled as one of two relief wells. The day after it started pumping pressure had declined somewhat, but it had not been pumping long enough for the crater to show any appreciable effect. To determine if the water being pumped into No. 3-C Thompson at 2,465 feet is getting into the crater a quantity of dye has been ordered to be pumped in with in. Meanwhile No. 4-C Thompson, the south offset relief well has 6-inch casing cemented and is expected to be pumping in water by April 9. Meanwhile No. 2-C Thompson, the first south offset, continues to flow as a geyser of fresh water, gas from the crater having got into the shallow water sand at around 200 feet, a 6-inch column of water rising 100 or more feet into the air.

Gulf Refining Co.'s No. 3 Rhymes in Section 28-17-6, one-half mile northwest of the nearest production but south of the northernmost producers in the field, appears to have missed the pay, as it has gone 3,031 feet without hitting anything. It will be drilled on down, however, in search of oil.

Gas Well Completions

In addition to the Pure, Ohio and Moody-Seagraves wells there were 11 other completions in proven areas of the Shreveport division, most of them gas. Atlantic Oil Producing Co. abandoned No. 1 Bain, Section 31-23-11, in the southeast corner of Cartersville Field, as a salt water hole at 3,088 feet after a shot failed to do any good. Natural Gas Products Co.'s No. 1 Floyd in Section 25-23-12, offsetting Palmer Corp.'s No. 1 Robertson, completed recently as a 150-bbl. producer, gauged 3,168,000 feet of gas at 1,100 pounds pressure, total depth 3,088 feet.

Beside Dixie company's No. 91 Dillon, Pine Island had another unprofitable well, The Texas Company abandoning No. 9-A Herndon in the same section, 14-21-15, as a salt water hole at 3,909 feet.

In the Ouachita Parish division of the Monroe district, Ouachita Natural Gas Co. completed No. 9 Smith, Section 29-20-4, making 13,000,000 feet of gas from 2,129 feet and the Palmer Corp. completed No. 3 Kate Cole, Section 38-20-4, at 2,156 feet with only 500,000 feet of gas. In Union Parish, Ruston Drilling Co. got 5,890,000 feet of gas at 2,171 feet in No. 1 Steel, Section 36-20-3. C. H. Lyons and others completed No. 1 Porter-Wadley, Section 36-23-10, Sarepta-Shongaloo district of Webster Parish, making 12,000,000 feet of gas, total depth 2,709 feet.

Arkansas

In Arkansas, Little Fay Oil Co. registered a Smackover completion with No. 5 Robertson, Section 25-15-16 Ouachita County, pumping 30 bbls. of fluid, 25 per cent water from 2,066 feet. Champagnolle had another dry hole in E. M. Jones' No. 1 Stegall in Section 2-17-14, abandoned at 3,250 feet at which depth it was approximately 200 feet below the discovery wells in the same section and across the line in Section 1.

Harrison and Panola Counties, in the East Texas gas district, each had one completion, the Waskom district in Harrison scoring one of the failures that are becoming more and more frequent and Panola getting a small gasser. Tylong Oil & Gas Co.'s No. 1 Armstrong, in the Simpson Holloway Survey, was dry in the deep sand at 2,994 feet and M. H. Smith and others completed No. 1 W. C. Agurs in the John Womack Survey, making 5,500,000 feet of gas at 1,080 feet.

Production Goes Up

Completion of the two deep wells in the new producing horizons in Cotton Valley and Champagnolle had their immediate effect on daily average runs from the field for the district as a whole, as well as for their immediate pools. Aided slightly by increased runs from two other pools, they turned a decline of 1,420 bbls. last week into an increase of 1,875 bbls. for the week just closed. This was accomplished with both wells flowing through chokes and on a four days' run, consequently, when opened to capacity the first full week's production ending April 14 will probably show a much larger increase unless continued declines in other pools should assume larger proportions than they have reached during the last several weeks.

Total daily average runs from the division as a whole were 129,700 bbls., compared to 127,885 last week, north Louisiana pools running 45,035 bbls. compared to 43,500, and Arkansas 84,695 bbls. compared to 84,385.

Completion of the Ohio's No. 38 Bodcaw has also necessitated creation of a new division in the list of north Louisiana crudes. Oil from the original 2,500-foot horizon of Cotton Valley does not test higher than 32 gravity and most of it not that high, whereas the new deep Trinity stuff is 49-50 gravity. Cotton Valley's original crude brings up to 75 cents per bbl. and the new crude is bringing $1.70 at the well, Standard Oil Co. taking the production. Hence, there appears in pipe line runs figures beginning

(Continued on Page 129)

NEW GAS-PRODUCING SAND FOUND BETWEEN RICHLAND AND MONROE

By D. H. Bancroft

SHREVEPORT, La., Apr. 9.—Existence of a new gas-producing formation midway between the Monroe proven area on the north and the Richland Parish Field on the south, suspected as a result of the Gulf Refining Co.'s No. 1 Ches Wymond, in Section 20-18-6, Richland Parish, was confirmed this week when the well was formally listed as a completion. Two weeks ago, after it had blown in with an estimated 10,000,000 feet of gas from 2,693 feet, it was reported as a completion but whether or not it was producing from a new and lower pay than in either Richland or Monroe or from the former had not been determined. There was approximately 300 to 400 feet of open hole and the wildcat had not been bailed since around 2,380 feet and some thought that the gas might be coming from the Richland pay. During the past week, however, the Gulf set 4½-inch casing at around 2,690 feet, cutting off upper horizons and completed the well making 8,500,000 feet of gas, total depth 2,693 feet. As the well is located on a machine "high" the new production is apparently in an older formation than the 200 feet difference in total depths would indicate. Three miles north and south of nearest production in Richland and Monroe, the new pay is 200 feet below the average Richland well and 400 to 500 feet below the average Monroe well, surface elevations varying very little.

Other than this well, wildcat activities in the Shreveport division produced negative results for the most part. Ouachita Natural Gas Co. bailed No. 1 Hamilton, Section 22-19-1e, Union Parish, and tested dry at 2,263 feet after a show of oil had raised hopes of production. It will go deeper. The same sort of shows have been obtained in various other wildcats drilled in that part of the country—the southern tip of Union Parish west of Monroe, and turned out the same way.

In Catahoula Parish, Lochnager Oil & Gas Co. drilled plug in No. 2 Beasley, Section 26-9-6, and before it was bailed the well filled up with salt water and, while it is shut down waiting orders, it probably will be abandoned.

Moody and Seagraves are still drilling No. 1 McDonald in Section 9-15-5, Richland Parish, 2½ miles west of nearest production—the recent Oliver and Masters completions in Section 2, and at 2,557 feet have not had a show, though four sands have been encountered and tested. It was dry at 2,400 feet, 2,500 feet, again at 2,531 feet and at 2,553 feet, indicating probably off structure or a steep dip.

Arkansas Geophysical Tests

Arkansas activities chiefly are confined to blocking acreage north of Monroe where several large blocks are being assembled and gone over with one or another of the various geophysical instruments. However, two new wildcat tests got under way during the week. One of these is being drilled by Joe Hurley and others in northern Bradley County where they have assembled a block of approximately 15,000 acres. Location is on the

(Continued on Page 133)

Battery of Brown Recorders checking % CO_2, stack temperature and oil temperatures in preheater, heater and outlet. The recorder at the left is the Brown Duplex CO_2 Meter and Pyrometer for checking excess air and heat absorption.

Measuring CO_2 in still furnaces

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Oil takes up heat slowly. It has to travel through miles of tubing, gradually absorbing heat, before it gets to the proper temperature.

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That means wasted heat, wasted oil and tubes that prematurely "coke-up." Extra shutdowns and cleaning are made necessary—wasting time and labor.

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Fig.1

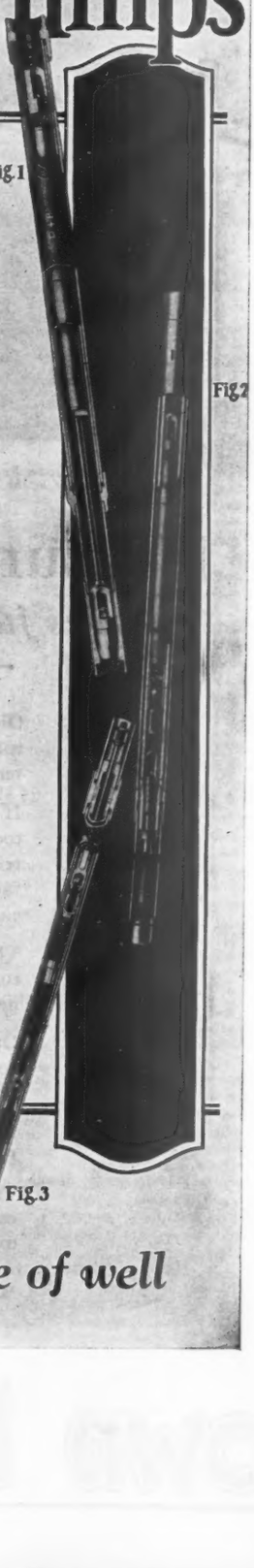

Fig.2

Fig.3

For twenty-two years an unbroken record of efficiency and economy which has been the standard of comparison in oil field pumping equipment

The Pumps Illustrated

Fig. 1. D+B Parker Style: In this type the standing valve is in a long steel extension shoe, below the bottom collar. This extension shoe permits testing the exact fit of standing valve body as when the pump is made up. Nipples of varying length permit any desired length of stroke. Equipped with Garbutt Rod for pulling the standing valve.

Fig. 2. D+B C&W Style: Fitted with either Garbutt Rod or Thompson Gas Valve as illustrated. A combination of D & B pump and gas anchor . . . particularly useful where there is gas to handle. Fitup shown is designed to increase the rate of fluid travel and prevent it from getting back around plunger.

Fig. 3. D + B Simplex Insert Pump: The logical deep-well pump goes in and out of the well on the rods, eliminating tubing jobs. No gas locks . . . sand cannot settle. Special plunger bottom valve eliminates churning, paraffined tubing and B. S.

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Dale Field Production Shows Increase

New Completions Add to Output in Southwest Texas. Natural Gas Companies Less Active in New Drilling

By B. D. Stevenson
Staff Correspondent, Southwest Texas

SAN ANTONIO, Tex., Apr. 9.—Production in the Dale Field in Caldwell County, due to the completion of four new wells and the shooting of the Sun Oil Co.'s well on the Talley lease, jumped to an average of 1,039 bbls. per day during March compared to 845 bbls. daily during February. There were 26 wells producing in March and 22 in February. Mirando, Luling and Lytton Springs pipe line runs each show a slight decrease for the month of March compared with the month of February. Luling and Mirando are the biggest producing areas in Southwest Texas. Production for February and March as shown by pipe line runs for the fields for which figures are now available was as follows, the figures being the daily average production in barrels:

	Feb.		March	
Pool—	No. Wells	Prod.	No. Wells	Prod.
Mirando	670	6,393	682	5,838
Luling	556	14,145	558	13,918
Lytton Spgs.	304	1,530	304	1,484
Dale	22	845	26	1,039

In storage in tank farms in the Mirando district there was 1,595,983 bbls. of crude of which 1,199,157 bbls. was in the Magnolia tank farm at Oilton which consists of 24 tanks of 55,000-bbl. capacity. In the Luling tank farm of the Magnolia at the end of March there was 1,556,949 bbls. of crude and of that 1,127,673 bbls. was Mirando crude. Humble has seven 55,000-bbl. tanks at Bruni in the Mirando Field and had in storage April 1 a total of 332,153 bbls. with capacity for 52,848 bbls. additional.

Less Drilling for Gas

A general slackening of drilling for gas in Southwest Texas is one of the features of the situation at this time. The understanding is there is an overproduction of natural gas and no more wells are needed. Furthermore the companies for the most part have enough territory proved up to guarantee against any shortage for some time and wildcatting will be limited. In the Adams Field in Medina County at this time there is not a rig running except to clean out wells already producing. In the White Point and Refugio Fields on the coast both the Houston Oil Co. and the Houston Gulf Gas Co. have very materially cut down their drilling and independent operators who are developing gas for them have likewise lessened their operations. Drilling for gas in the Mirando territory has been rather slack for some time and there is no change there.

In the Mirando district, Cole Petroleum Co. has completed No. 55 Benavides flowing 60 bbls. of oil on choke from sand at 2,320-31 feet. It is one of the best wells yet and the production from five wells in the field all at about the same depth and all on choke is now about 200 bbls. daily. It is believed if the wells were opened up they would easily make a total of 500 bbls. a day. The effort is to conserve the gas. Cole Petroleum Co. has been keeping two rigs in the field and the past week brought in another rig. No. 56 Benavides is now drilling and the other rigs will move to Nos. 57 and 58. All of the wells are in Survey 412 of Webb County north and a little west of Bruni Station.

In the proven fields of the Mirando territory, Killam's No. 1 Bruni in Block 64 of the Albercas grant completed a few months ago as a gas well, is now making about 7 bbls. of oil an hour. This new pool due north of the Henne, Winch & Fariss Pool and a little north of the south line of Webb County consists of but two or three wells. Newton Drilling Co. last week abandoned its No. 1 Bruni in the same block at 2,200 feet, having missed the pay, but the Killam well making 7 bbls. of oil an hour will keep attention focused on that spot.

Completions—Bexar County

Schimmel Petroleum Co.'s No. 4 Ginter, Block 39, Somerset Field, at 1,425 feet, completed 6-bbl. well; No. 6 Ginter, Block 39, Somerset Field, at 1,425 feet completed 6-bbl. well.

N. A. Saigh's No. 5 Frees, Survey 49, Somerset Field, completed at 1,325 feet approximately 6-bbl. well.

Driscoll Field

In the new Driscoll Field in Duval County, Driscoll's No. 11 fee is on the sand and waiting to test. On a drill stem tester it indicated that it would be a big gas well and casing has been set. The sand depth is 2,458-61 feet which is practically the same as in the other two gassers completed. No. 9, which is off to the northeast 1,000 feet from No. 8, missed the pay and is standing at about 3,000 feet. National Oil Co., a few miles to the east, is down 2,212 feet and standing. It will resume in a few days. The interest in it is whether it will pick up the same sand and whether the sand will be thick. Sands in the Mirando territory have seemed to thicken as they go east.

Edward St. Albans is drilling at about 1,200 feet in his No. 1 Hyatt in Block 25 of the Sweden farm tracts, about 2 miles north and a little east of the Driscoll wells. No. 9 Driscoll that failed to pick up the 2,450-foot sand is on a line between the St. Albans well and the Driscoll discovery gas well, hence no telling what will happen. With two producers in and the third one with casing set the field is too small to form an estimate and it may be that St. Albans will pick up the sand in spite of the dry hole between.

Caldwell County

The Texas Company's No. 5 Osteen, Swearingen Survey, Dale Field, completed at 2,124 feet a 75-bbl. well; No. 1 O. T. Moore, J. Gilbert Survey, Dale Field, completed approximately 75-bbl. well.

O. W. Killam's No. 1 Alexander, J. S. Alexander Survey, a wildcat, has been abandoned dry at around 937 feet.

Jim Hogg County

Magnolia Petroleum Co.'s No. 36 Merchants State Bank, Survey 415, Randado Field, has been abandoned at 1,270 feet after testing small amount of oil and water.

Moody Corp.'s No. 13 Palacious, Survey 81, Block 4, Randado Field, at 1,277 feet has been completed a 30-bbl. well.

Kleberg County

Humble Oil & Refining Co.'s No. 6 Kleberg, Section 40, Block 1, Kingsville Field has been abandoned after plugging back from 2,430 feet to 2,305 feet where it tested dry.

Webb County

Cole Petroleum Co.'s No. 55 Benavides, Cole Field, Survey 412, Block 4, at 2,331 feet, total depth, is flowing 60 bbls daily.

Schott-Tafell's No. 1 Bruni, Cole gas field, Survey 585, has been abandoned dry at 2,735 feet.

Newton Drilling Co.'s No. 1 Bruni, Block 64, Albercas field, at 2,200 feet tested dry and has been abandoned.

NEW LOCATIONS

Caldwell County

Doctor Butte and associates are moving in machinery for No. 1 Branyon.

Duval County

Partee and others' No. 1 Hahl, Survey 78, Government Hill area, is location 500 feet to north line and 150 feet to west line of Block 16.

Guadalupe County

O. W. Killam's No. 1 Lynch is drilling at 2,100 feet.

Jim Hogg County

Magnolia Petroleum Co.'s No. 37 Merchants State Bank, Survey 415, Randado Field, has derrick up 150 feet to south and west lines.

Webb County

Magnolia Petroleum Co.'s No. 11 Garcia, Survey 58, Schott Field, is location 150 feet to north line and 1,620 feet to east line; No. 4 Benavides, Block 2, O'Hern & Seacord Subdivision of the Cole gas field, is location, and is rigging up.

Salley and others are making location for test in the Aviator Field on the old Radio lease.

Ruthada Oil Co.'s No. 8 A. M. Bruni, east one-half of Block 18, Aviator Field, is drilling at 200 feet.

Cole Petroleum Co.'s No. 58 Benavides, Survey 412, is making location.

Cole Gas Field—Duval

Schott & Tafel's No. 1 Bruni, Survey 585, located 3,000 feet to NW cor. and 150 feet to west line, is drilling at 2,450 feet. Magnolia Petroleum Co.'s No. 2 B. Benavides, corner of Blocks, 146, 147, 194 and 195, is drilling at 350 feet; No. 3 B. Benavides, is location at corners of Blocks 144, 145, 196 and 197. Houston Oil Co.'s (Sun) No. 1-B Lopez, Survey 319, Block 4, located 155 feet to northeast lines and 465 feet to southeast lines, has sand at 1,717-22 feet and on drill stem test showed dry gas with 450 pounds rock pressure and is setting liner.

Humble—Reiter-Foster Field

Humble Oil & Refining Co.'s No. 7 Kohler, Survey 165, located 200 feet to north and west lines, is testing at 2,805 feet.

Driscoll Pool

Robert Driscoll's No. 11 fee, Survey 448, located 560 feet to east line and 1,050 feet to south line, is drilling at 2,100 feet. Edward St. Alban's No. 1 Hyatt, Block 25, located 450 feet to south line and 150 feet to west line, is drilling, having spudded in March 28.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 36 Merchants State Bank, Survey 415, located 1,100 feet to west line and 2,400 feet to north line, at 1,270 feet tested salt water and small amount of oil. Lightfoot and others' No. 1 Palacious, Survey 287, Block 13, located 150 feet to north and west lines, is drilling at 1,200 feet. Moody Corp.'s No. 13 Palacious, Survey 291, Block 14, located 150 feet to east line and 121.6 feet to north line, has sand at 1,276 feet. Frank Koury's No. 1 Jones Weil, Survey 81, Block 9, located 200 feet to east line and 150 feet to south line, is drilling at 500 feet.

Schott Field—Webb

Magnolia Petroleum Co.'s (Carnahan) No. 1 Garcia, Survey 53, located 200 feet to south line and 500 feet to east line, is drilling at 3,360 feet.

Cole Field No. 2

Cole Petroleum Co.'s No. 55 Benavides, Survey 412, Block 4, located 150 feet to south and west lines, has sand at 2,320-31 feet and is testing; No. 56 Benavides,

(Continued on Page 126)

JOE BRUNER'S WELL IN LULING FIELD HAS ITS OWNER GUESSING

By B. D. Stevenson

SAN ANTONIO, Tex., Apr. 9.—Joe Bruner has an oil well about 1 mile north of the town of Luling in Caldwell County that has the record of being the only well with a production of significance in the Austin formation in Southwest Texas. At a total depth of 2,688 feet it bailed 51 bbls. into steel storage after having been bailed dry and then let set for 24 hours. Considerable of the bottom of the hole is open and the bailer was not run to the bottom. This well was reported last week in The Oil and Gas Journal.

For more than a week the well has been swabbing and coring at intervals. After being bailed down on one occasion it swabbed 30 bbls. each of the two days succeeding. Total depth then was 2,673 feet. It has been deepened by coring to 2,688 feet and the cores show the formation very sandy and hence it is not Austin chalk though from the Austin formation. In spots the formation was soft and crumbly. The oil is between 38 and 39 gravity and greenish in color and completely free from water.

Late last week the well was running tubing with a packer to see if it will flow. This well was completed several months ago at 2,557 feet in the top of the Austin chalk and carried considerable oil. It was decided lately to deepen with the result that the production has been improved. It has not been decided just what further to do with the well but may continue coring as long as the cores show oil. This well is approximately 5 miles southeast of the axis of the Luling Field where production is obtained in the Edwards at about 2,150 feet, the Edwards being a formation below the Austin with other formations between.

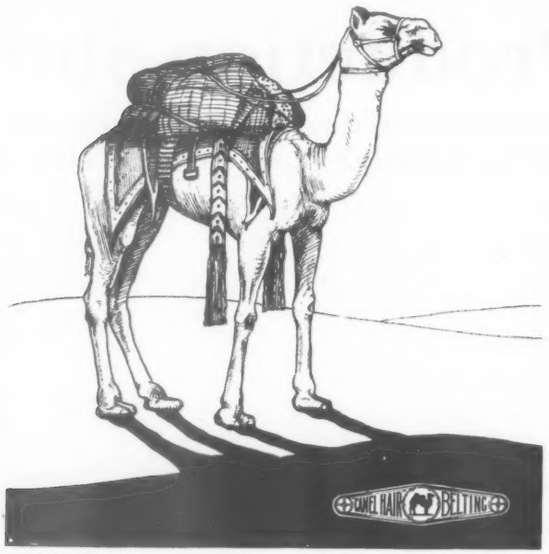
Only One Well Made in It

Frequently showings of oil have been found in the Austin chalk throughout Southwest Texas but never heretofore has a well been made in it with the exception of the North & South's No. 1 Callahan, 9 miles north of the Bruner well in Caldwell County which is making about 1 bbl. a day from the same formation. Caldwell County produced the first Edwards lime oil well when the North & South, drilling against the advice of geologists, discovered the Luling Field, and it is also the home of two of the three Serpentine fields in Texas and now has the first well of importance in the Austin.

Last week Trinity Driller got 30 feet of Serpentine showing a little oil at 1,969-99 feet in the No. 1 Miears, 2 miles southwest of the discovery well of the Dale Field in Caldwell County. Dry holes that failed to pick up the Serpentine located between the new well and the Dale Field indicated that it would not be an extension of that field, but geologists believed there was another Serpentine plug there and seem to have been right.

The well is located approximately in the center of the Charles M. Cannon Survey and is about 3,000 feet nearly due north of the Reiter-Foster's No. 1 Brown in the same survey that found a little Serpentine with a showing of oil, but failed to make a well. There are wells 3,000 to 5,000 feet west and north that found no Serpentine whatever. The

(Continued on Page 125)



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Third Producer in Twin Mounds, N.M.

Getty Well Has Initial Production of 430 Bbls. on the Swab. Gas Completion on Cisco Fold, Utah, to Lead to Several New Tests

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Apr. 9.—The Rocky Mountain area furnished more than its usual quota of interesting developments last week. In New Mexico, the Getty Oil, Inc., completed its No 2 Dooley, in the Twin Mounds district 10 miles southeast of the Artesia Pool in Eddy County, with an initial production of 430 bb'ls. on the swab from 1,378 feet, this being the third producer in the new pool. The Standard Oil Co. of California has signed preliminary contracts with the Marland Oil Co. of Colorado for a minority interest in more than 100,000 acres in Lea and Eddy Counties.

In Utah, the Crystal Carbon Co. is completing a gas well on the Cisco fold in Grand County, and plans are going forward for several new tests. The Embar Oil Co. made an interesting record in its Big Six well by drilling 5,345 feet with a machine.

In Colorado, the Continental Oil Co.'s wildcat on the South McCallum Dome in Jackson County, 6 miles southeast of the discovery, blew in at 4,875 feet with a heavy pressure of carbon dioxide gas which blew the tools 2,000 feet up the hole and caused a bridge before it could be tested or determined whether oil accompanies the gas. The Left Hand Oil Co. will make another test near Lyons where a well drilled last year showed the Muddy sand saturated at depth of 2,000 feet, and a test is getting under way in Yuma County, near the Nebraska line.

Colorado shale interests have started action in the Supreme Court of the District of Columbia to test the legality of Secretary Work's decision in the Krushnic case.

In Wyoming, three wells were completed in Salt Creek; a small light oil discovery was made in an upper horizon 3 miles north of the Ohio's well on the Oregon Basin Dome in Park County, and the Buck Creek Oil Co. has its second producer on the new Ant Hills Pool in Niobrara County. No test was made, however, as the well is being continued to lower horizons. Midwest interests are starting a new wildcat in Lincoln County.

Sinclair Bid Aided Prices

The Government's proposed investigation of its contract with the Sinclair Crude Oil Purchasing Co. for the sale to the latter of the royalty oil from the public domain in Salt Creek failed to create much excitement out here. The reason is that those familiar with the contract have considered it one of the best things that happened around the time it was made for the oil industry in the Rocky Mountain area. The contract was made December 20, 1922, after competitive bids had been received, 13 oil companies submitting bids. The announcement was made at Washington at the time that the Sinclair Crude Oil Co. was awarded the contract because it agreed to pay the highest price, it being figured that on the basis of the quantity of royalty oil then being run that the Government would receive annually $821,250 more than the next highest bid. The contract ran for five years with privilege of renewal for another five years upon notice to the Government of the company's intentions to renew. This notice was made last year and the renewal became effective as of January 1, 1928.

At the time the contract was made, the posted price for Salt Creek crude was $1.35 per barrel and for Mid-Continent crude of the same grade, $1.70. This differential between Salt Creek and Mid-Continent prices had been a bone of contention for a long time. The Sinclair bid provided for the payment of Mid-Continent prices for Salt Creek crude and the awarding of the contract had the effect of wiping out the differential. It helped not only all Salt Creek producers, but benefited the entire region for since then Mid-Continent prices have been largely the basis for Rocky Mountain prices, the same scale prevailing at Wellington, Fort Collins, Florence and some other points, except that at Florence a slight premium over Mid-Continent is being paid. When all of these factors are taken into consideration, it is easy to understand why the proposed investigation fails to create any enthusiasm out here.

Wyoming

The Spindletop Syndicate's No. 1, NE SE SE, Section 32-30-81, on the Spindletop Dome, in Natrona County, 25 miles southwest of Casper, gives evidence of opening a new pool of heavy oil. The well is being drilled by George Jarvis and associates At 1,055 feet it topped the Sundance sand and commenced showing oil. It was drilled 16 feet into the sand to 1,071 feet where operations were suspended to make a test. The oil is heavy, appears to be of a mixed base and of about 22 to 23 degrees gravity. It looks as if it might make 150 bbls. initial and settle to 40 to 50 bbls. The structure was tested a few years ago by the New York Oil Co., which found some oil in the Sundance and also in the Embar at a lower depth, but it was not in large quantities and the leases were surrendered without further drilling. The Bolton Creek Oil Co.'s pipe line from Bolton Creek, 3 miles to the south, to Casper runs within 3 miles of the new well and connections will be made. The Bolton Creek company is a subsidiary of the Kinney-Coastal Oil Co., and it is running oil from Bolton Creek from six wells of the Iowa-Wyoming Oil Co., another subsidiary. The discovery is one of three wells the syndicate plans to drill. The Kinney-Coastal Co. is making a deep test on Bolton Creek in its No. 1, SE SE, Section 4-29-81, which is shut down for the winter at 2,440 feet in the top of the Tensleep.

The Ant Hills structure in Niobrara County, northeast of the Lance Creek Field and southwest of Mule Creek, scored for the second time the past week when the Buck Creek Oil Co.'s No 1 Hattie Peterson, NW cor. NW, Section 30-37-62, topped a sand at 3,928 feet which showed for a commercial producer. It was not tested, but it is estimated it would make about the same as the discovery well one-fourth of a mile to the west, which swabbed 250 bbls. initial from the same horizon and which is now producing between 150 and 200 bbls. per day. The Peterson well is the second test drilled on the structure. The discovery, the Buck Creek company's No. 1 Delahoyde, NE cor. NE, Section 25-37-63, found the same sand at 3,946-52 feet. It was drilled to 4,178 feet where the hole had been so reduced that it was decided to plug back. The Peterson well is in good condition for a deep test and the oil in the first sand will be cased off so that drilling may continue. The oil is dark green and tests 35 degrees gravity. The producing horizon is believed to be either the Newcastle sand of the Osage Field, or the Muddy, but it probably will not be definitely identified until the lower horizons are more fully explored. The Buck Creek company has a rig up for its No. 1 Peter Peterson, SW section 30-37-62, and for No. 1 State, NE cor. Section 36-37-63 These tests will probably reveal the extent of the producing area of the new pool.

Three completions in Salt Creek were reported the past week, all on the leases of the Midwest Oil Co., but have not been tested. These were No. 31-L, NE Section 23-40-79, completed at 2,522 feet; No. 1-L, SW Section 23-40-79, at 2,548 feet, and No. 13-L, NW Section 34-40-79, at 2,397 feet. All were completed in the Lakota.

Hiawatha Dome Gasser

The Ohio Oil Co.'s No. 1 Wilson, SE cor. Section 24-12-100, being drilled for the account of the Custer Petroleum Co., on the Hiawatha Dome in Sweetwater County, on the Wyoming side, which was reported last week having come in as a gasser, but not confirmed at the time, encountered gas at 1,547 feet. It proved to be a pocket in an 8-foot sand, and drilling is continuing. Casing is being run at 1,785 feet at which depth it will be cemented to shut off water. The Producers & Refiners' No. 1, NE SE Section 26-20-104, North Baxter Basin structure, joint test with the Marland Oil Co., which has been shut down for the winter at 485 feet, is resuming this week. This test is located 3 miles north of the same companies' No. 1 Union Pacific, NW Section 11-19-104, which was drilled in 1926 near a fault and which showed gas of an entirely different quality from that found on the structure to the south.

The Cody Petroleum Co. is preparing to install equipment to use the gas lift method in producing its No. 1 Klindt and other wells on the Oregon Basin structure in Park County. Five car loads of materials including compressor, tubing, boilers and other equipment arrived at Cody from Oklahoma the past week and is being trucked out to the company's main camp. S. C. Ferdig, president of the Cody Petroleum Co., is quoted as saying the company has a market for its oil up to 20,000 bbls. a day. The market has not been disclosed, but the company has been shipping oil in limited quantities to Montana and Canadian refineries. The company's No. 1 Klindt, NE SE NE Section 7-51-100, was completed recently in the Embar at 3,770 feet, is flowing around 750 bbls. per day. When the gas lift is applied, it is expected to show a very large increase, and the use of this method in bringing the heavy black oil to the surface will be watched with considerable interest. The production on this structure comes from sands that lie below a gas horizon. However, the United States Bureau of Mines will not permit the direct use of gas from one horizon to lift the oil from another, but requires the different horizons to be produced separately. That means that in order to send the gas back into the lower sands it would first have to be brought to the surface and then sent down inside the smaller pipe. The gas then has to be treated to recover any gasoline absorbed in the process. Since such an arrangement in the end amounts to about the same thing from an economical standpoint, it is presumed that the Cody people decided to install compressor and regular gas lift apparatus similar to that used in Seminole and take a short cut to

(Continued on Page 77)

DALHOUSIE WELL, TURNER VALLEY, PRODUCTION TESTS 76 DEGREES

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Apr. 7.—In the Turner Valley Field southwest of Calgary, Dalhousie Oil Co.'s No. 1, LSD 4, Section 18-20-2w5, is on the separator, and the first day made 361 bbls. of crude naphtha, which is considerably better than the initial output of Royalite Oil Co.'s No. 4 gusher. Dalhousie No. 1 production is coming through one separator; the well is still throwing out fragments of rock, and till these have stopped coming, a second separator will not be installed, owing to danger of plugging. With a second separator the production of crude naphtha will be considerably increased; considerable gasoline is being burned up with the waste gas, as indicated by the amount of smoke with the flame. As soon as the well has cleaned itself out a second separator will be put in and crude naphtha recovery made complete. While drilling was in progress a column of crude oil was used in the well to hold down the gas; and this has resulted in some discoloration of the initial crude naphtha production. The naphtha is delivered through the Royalite Oil Co. pipe line to the Imperial Oil, Ltd., refinery at Calgary. The Dalhousie No. 1 shows a heavier frost on the separators than any of the other deep producers in the Turner Valley, but so far there has been no indication of the well itself freezing since it thawed out the first time. The gas production continues around 19,000,000 feet a day. The crude naphtha from Dalhousie No. 1 tests 76 Baume, which is 3 degrees higher than Royalite No. 4, the Royalite production having heretofore tested the highest in the Turner Valley. The Dalhousie production is between 16 and 18 degrees higher than commercial gasoline.

Dalhousie Oil Co.'s No. 6, LSD 10, Section 13-20-3w5, is at 4,850 feet and drilling past some lost tools.

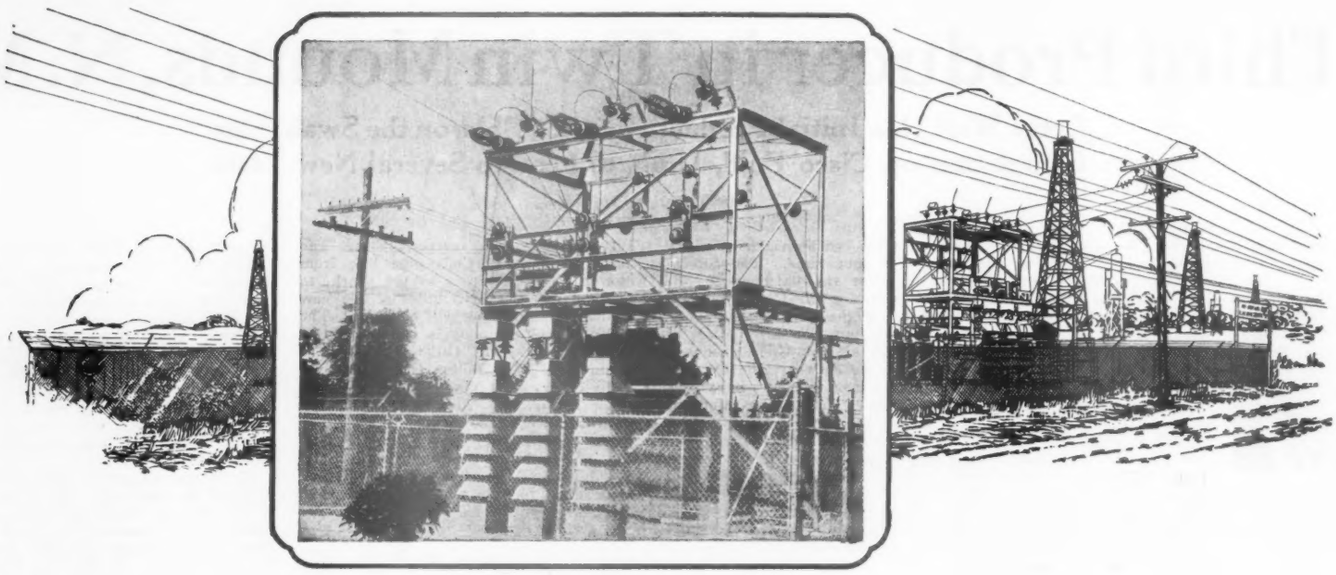
Royalite Operations

Royalite Oil Co.'s No. 6, LSD 16, Section 31-10-2w5, has installed the diamond drill outfit from Dalhousie No. 1 and started drilling into the deep lime at 4,280 feet. This will probably be the next deep producer brought in. Royalite Oil Co.'s No. 8, LSD 9, Section 12-20-3w5, is standing cemented at 3,676 feet. Royalite's No. 9, LSD 6, Section 13-20-3w5, which was cemented at 4,085 feet is reported to have resumed drilling. Royalite's No. 11, LSD 10, Section 12-20-3w5, is at 1,715 feet and running 12½-inch casing.

Foothills Oil & Gas Co.'s No. 1 SW, Section 26-20-3w5, is at 2,891 feet and sidetracking some lost tools. Foothills' No. 2, LSD 8, Section 1-20-3w5, is standing cemented at 2,255 feet. Home Oil Co.'s No. 2, LSD 14, Section 20-19-2w5, is at 3,705 feet and drilling, after cementing casing at 3,692 feet. Home's No. 3, same LSD, is rebuilding rig; the test will resume at 184 feet.

Royalite Oil Co.'s No. 13, LSD 6, Section 13-20-3w5, has a rig nearly up. Royalite's No. 14, LSD 4, Section 7-20-2w5, is practically rigged up. Royalite's No. 15, LSD 1, Section 12-20-3w5, and Royalite's No. 16, LSD 2, same section, are

(Continued on Page 125)



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By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Apr. 7.—California operators lopped off 30,690 bbls. per day of heavy oil production in the San Joaquin Basin during the past week by shutting in 207 producing wells out along the West Front of the Kern River Field, 22 at Midway-Sunset and 236 pumpers in the Coalinga Field and there is a possibility that an additional arbitrary curtailment will be made during the course of the next few weeks. Production in the West Front of the Kern River Field has been entirely suspended, the curtailment in this area aggregating 20,850 bbls. per day. Development work in this section will continue although operators will not drill these new wells into completion but will allow them to stand cemented just above the pay. The inability of California refiners to absorb heavy crude in the face of a lessened demand for fuel oil due to decreased shipments to the Atlantic Coast was directly responsible for the conservation movement which was brought to a climax last week by the artificial curtailment of heavy production in the fields mentioned above. It is impossible to limit production in the older section of the Kern River Field because of water intrusion and operators in this area therefore did not participate in the reduction in production of heavy crude. In the West Front extension, however, which has only been in existence for a few years, the General Petroleum shut in 3,700 bbls. per day; George F. Getty, 3,650 bbls.; Standard, 2,650 bbls.; Chanslor-Canfield Midway Oil Co., 2,200 bbls.; Associated, 2,150 bbls.; California Petroleum Corp., 1,850 bbls.; Petroleum Securities, 1,800 bbls.; Bishop Corp., formerly Wonder Oil Co., 1,550 bbls.; St. Helens Petroleum, 800 bbls.; California Star, 300 bbls.; Brownmoor Oil Co., 100 bbls.; and Kent & Whittier, 110 bbls.

The shut in at Coalinga and Midway-Sunset has not yet become entirely effective and it will probably be another 10 days or two weeks before the projected curtailment in these fields has become a reality. The Standard and Shell have already closed down at Coalinga, however, and this restriction will probably lead to similar action by other concerns, although no definite indication of any such intention has been manifested up to date. The Standard shut in 140 producing wells which had been producing 4,595 bbls. of heavy oil daily, while the Shell shut in 96 producers which had been pumping 3,900 bbls. daily. The curtailment by the Shell, incidentally, results in an entire suspension in production activities in this field and although the company's holdings are capable of producing approximately 16,000 bbls. per day every producing well has been indefinitely shut down and not a barrel of oil will be lifted until existing restrictions are mutually removed. The greater part of the Shell's production at Coalinga has been curtailed for over two years, the company's shut in during this period approximating 13,000 bbls. per day. The California Petroleum, which has a production of around 2,000 bbls. per day at Coalinga, will probably eventually curtail the greater part of this production of heavy crude although its restriction at the present time only aggregates approximately 600 bbls. per day. The Union, General Petroleum and Associated will probably also limit production in this field in the near future. The curtailment in production of heavy crude in the Midway-Sunset is somewhat of a myth at the present time, although it may become a reality in the very near future. The Standard led the way in this direction several days ago by shutting in 1,345 bbls. per day and other producers are expected to follow shortly. The restriction in production accomplished since the first of April has brought the total California shut in to approximately 122,000 bbls. per day, a relatively small part of which is light refining crude. The production chart appearing herewith indicates the production trend during the past several months and while it does not reflect the curtailment just made in the production of heavy crude it illustrates the necessity for such action. When considering the effect which the present curtailment will exert on future State production one must not lose sight of the fact that Long Beach and Ventura Avenue will probably more than offset this curtailment during the next 90 days due to deep drilling. This new production, however, will be a light refining crude which refiners can use to advantage. The curtailment in heavy crude effected during the past several weeks has greatly improved local conditions as it will prevent the accumulation of heavy crude and fuel, such as has occurred during the past several years.

Long Beach

The most interesting development in the Long Beach Field during the current week was the completion of the first successful producer below the 7,000-foot level. This was the Shell's No. 4 Martin, a new well which came in under a natural flow doing 1,850 bbls. of clean 30.2 gravity oil daily from 7,060 feet and while this project did not show the high initial production anticipated it was nevertheless a very satisfactory completion. A penetration of 1,790 feet was taken in the lower zone and the bit was still in the pay when drilling was concluded, indicating the existence of an additional thickness of sand. The Shell officially listed three other wells during the week, No. 32 Alamitos, No. 9 Cresson and No. 7 Nesa, all of which were finished during the latter part of last week, and a check indicates the probable completion of several more within the next 10 days. No. 32 Alamitos showed an initial flow during the first 24-hour test of 3,930 bbls. of 28.9 gravity oil daily from 6,444 feet, while No. 9 Cresson tanked 2,926 bbls. of clean 30.7 gravity oil daily from 6,566 feet. No. 7 Nesa, the smallest of this trio of new wells, came in under a natural flow doing 1,105 bbls. of 30.8 gravity oil daily from 6,706 feet, the hole having been finished with 5¾-inch oil string carrying 1,525 feet of 90-mesh screen. The Shell has just completed No. 1 Hutton, and, while the initial production test has not yet been concluded, it is flowing at the rate of approximately 2,000 bbls. daily. Four new wells are also expected in momentarily on the Alamitos lease and Nos. 26, 28, 29 and 31, the wells in question, should all register favorable production upon completion.

The California Petroleum brought in No. 7 Davidson, a new deep sand completion at 6,641 feet, and this well tanked 2,260 bbls. of clean 31.4 gravity oil during the initial 24-hour test. This company has three other wells nearing completion in the lower zone, No. 9 Harlow Kent, No. 2 Lewis and No. 4 Robinson, and this trio should be on production soon. Dabney & Johnston made a preliminary production test on their No. 6 about 10 days ago and while it was slow in getting under way it subsequently built up to 3,600 bbls., the oil testing 30.4 degrees. These two operators are making preparations to bring in No. 3, another new well, and Nos. 5, 7, 8, 9 and 10 are also scheduled for completion within the next 30 days.

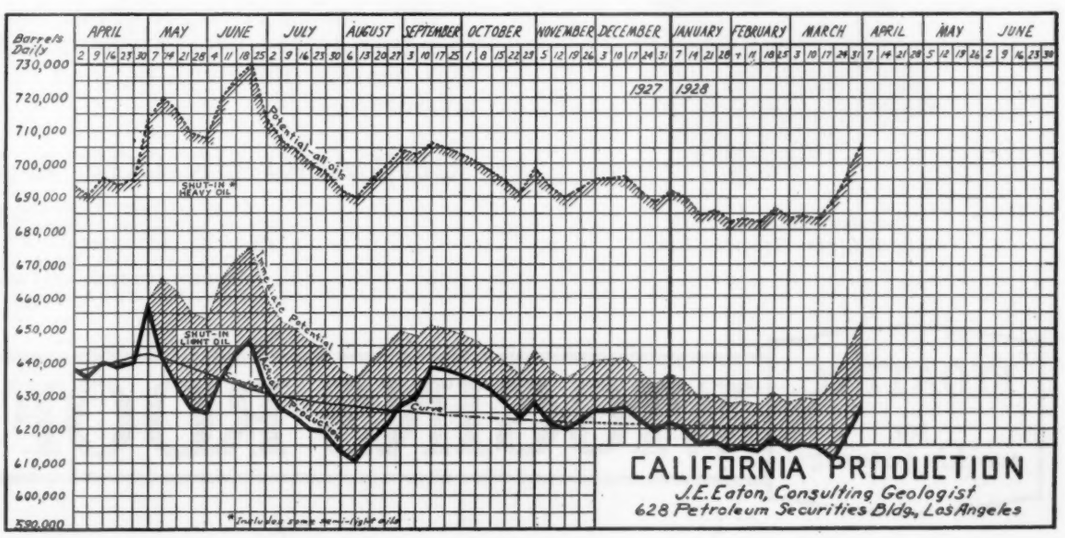
The Rio Grande Oil Co. finished two new wells at Long Beach during the week, No. 2 Flower State showing an initial of 1,280 bbls. and 2,000,000 feet of wet gas daily from 6,320 feet, and No. 2 on Municipal Lease B, 1,910 bbls. and 2,250,000 feet of saturated gas per day from the 5,632-foot level. The Rio Grande interests have approximately 65 acres of land in the Long Beach Field and although the entire holdings will probably not yield prolific producers the company can anticipate greatly increased production as the result of contemplated new work. The Richfield Oil Co. concluded negotiations a few days ago for the acquisition of A. J. "Art" Delaney's present holdings in the Long Beach Field for a reported consideration of approximately $750,000 and the latter will devote his attention elsewhere. Delaney, who has been one of the most successful independent producers in this field, concluded a similar lease with the Richfield interests several months ago, at which time he disposed of the San Martinez properties in addition to some personal holdings, a net profit in excess of $500,000 resulting from this transaction. The deal just consummated gives the Richfield four producers, four drilling projects and about 1,000 bbls. per day of settled production. The Union Oil Co.'s No. 13 Long Beach Community was a distinct failure upon completion in the deep zone at 6,479 feet a few days ago as it only showed an initial of 300 bbls. daily. This well has been a jinx almost since spud, one fishing job leading to another. The failure of this well to result in substantial production was very discouraging, as it is favorably located with respect to structure, and should have registered an initial of at least 1,000 bbls. per day.

Ventura Avenue

Operators in the Ventura Avenue Field are experiencing some little difficulty in preventing a surplus production of natural gas and while gas waste was temporarily eliminated a few weeks ago by artificial curtailment subsequent completions have again complicated matters although the present excess approximating 10,000,000 feet per day is only of a minor consequence. The situation was complicated still further during the past week when the Shell's No. 24 Gosnell came in under a natural flow doing 1,850 bbls. of clean 30.3 gravity oil and 1,500,000 feet of wet gas daily from an even 7,000 feet. This new well is one of several which the Shell should complete in the Ventura Avenue Field within the next 30 or 60 days and in accordance with the provisions of the conservation agreement covering this field it will be permitted to flow unhampered for 30 days before being pinched in 20 per cent. No. 25 Gosnell and No. 24 Taylor should lead the procession in this field as both of these wells are below the 6,400-foot level at the present time. The Associated should bring in No. 100 Lloyd in the very near future but it will probably be another 60 days before this company finishes any of the other 15 projects which are under way at the present time. The Petroleum Securities, however, has been making good footage in the six wells on the Orton lease in the southern part of the field and four of them, Nos. 1, 2, 4 and 5, look good for completion within the next four or five weeks. The General Petroleum is making preparations to bring in No. 2 Hisey and this potential producer may be tanking oil within the next 15 days.

Rincon

The Rincon Field closed another uneventful week but the Miley Oil Co. and the Pan American should liven things up a little within the next 10 days as both are scheduled to test out heretofore untried deep zones. The former has just



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set pipe in No. 1 Hobson, which has been carried down to 3,283 feet, and this well should make a bid for production in the very near future. The most important deep test at Rincon is No. 2 State of the Pan American which encountered a rather promising sand several days ago at 3,954 feet, a string of 8⅝-inch being subsequently landed at 3,906 feet. This is the deepest project drilled in the Rincon Field up to the present time and while the potentiality of this sand will not be definitely determined until the production test is made some time during the coming week it shows more promise than any of those heretofore encountered. There has been a very marked tendency on the part of operators in the Rincon Field during the past month to develop deep production as it is the general consensus of opinion that none of the shallow zones are of sufficient thickness to result in sustained commercial production.

Structural conditions at Rincon bear a striking similarity to those existing in the prolific Ventura Avenue Field located 5 or 6 miles to the east and in as much as it has been impossible to develop commercial production above the 4,000-foot level in the latter area, it is logical to assume that shallow production at Rincon will also be unprofitable. The Pan American has definitely given up any idea of developing commercial production above the 3,900-foot level in the latter field and the company has accordingly resumed drilling on three projects which had been temporarily suspended pending the outcome of initial exploratory work. The results of development work undertaken in this field up to the present time have been very unsatisfactory as far as commercial production is concerned but the writer has never entertained any hope of economic production in any of the shallow zones already opened up. This opinion was made several months ago simultaneous with the completion of the Pan American's discovery well, notwithstanding the fact that this project showed an initial flow of 1,000 bbls. per day.

The only hope of developing commercial production in the Rincon Field lies in deep drilling below the 4,000-foot level and while production is not definitely assured below this point it is generally conceded to be a good bet. There is no justification, however, for the simultaneous drilling of 20 wells as is being done at the present time for this field may prove a repitition of what occurred recently in the Potrero Field in the Los Angeles Basin where a number of wells were spudded in before the discovery well produced a barrel of oil. It cost wildcatters about $500,000 for their folly at Potrero and this field is still technically wildcat acreage although the Associated's No. 2 Cypress should ultimately result in commercial production. No. 1 Cypress, which resulted in the wild rush to get production at Potrero about a year ago, was located east of the Newport-Beverly fault which bisects this field in a north-south direction and when it failed to produce the Associated swung to the west across the fault and to the south for its second test which will make a bid for production in the very near future. It is unofficially reported that the Mining Bureau has been responsible for the delay in determining the productivity of the Rincon Field of Ventura County by retarding the progress of prospectors until each zone has been thoroughly tried out and proven unproductive and while this procedure may be justified in view of the major increase in production anticipated at Long Beach, it might not be so good if the projected lower zone of this field proves a dud as operators have already expended in excess of $500,000 an have only produced approximately 12,198 bbls. of crude up to date.

Seal Beach

The general conservation movement under way in the San Joaquin Basin and the deep sand exploitatio nat Long Beach has had a tendency to temporarily divert attention away from the Seal Beach Field but this district may again come into the limelight at some future date if the deep Bonner zone below the 6,000-foot level is eventually proven highly productive. The potentiality of this horizon in the Alamitos Heights town lot section is still undetermined due to a number of complicated factors but it should be definitely tried out in the very near future. Several producing wells have been finished around the edge of the twon lot area, all of them showing an initial of better than 1,000 bbls. per day but favorable production has not yet been secured on the apex. The Petroleum Securities will probably test out this lower horizon some time within the next 30 days and unless mechanical trouble develops this well should prove a definite marker. The Standard picked up the Bonner zone in No. 14-A San Gabriel several days ago and this well, which is drilling ahead in the oil sand at 6,225 feet, will be listed for completion within the next three or four weeks. The Marland will make a super deep test in the meantime and the well selected, No. 12 Selover, will be carried down in search of a new deep zone below any heretofore logged. This well recently passed the 6,750-foot level and drilling will continue indefinitely unless an oil sand is encountered around the 7,000-foot level, in which event drilling operations will be concluded and a production test made. Although the Selover zone in the Seal Beach Field has been proven more prolific than the upper or Bixby horizon, the Marland is experiencing exceptional success with its repressuring work in the latter zone. Dry gas has been introduced into the Bixby horizon for the past few months under pressure as high as 1,400 pounds and this artificial stimulation has resulted in a very satisfactory production.

Huntington Beach

Development work in the Huntington Beach Field is practically at a standstill, although there are a number of projected shallow zone wells under way in the town lot area at the present time. The Standard is also running a few strings of tools on the Bolsa Chica lease in the older section of the field and this property can be counted upon for a limited number of new wells from time to time. The southern California Drilling Co. has just completed No. 1 Dabney in this field at 2,845 feet and this new well showed an initial pumping of 95 bbls. daily. There were no developments of interest during the past week in the Rosecrans, Inglewood, Dominguez, Torrance or Santa Fe Springs Fields, all of these areas being rather quiet due to decreased drilling. The Richfield district, which showed evidence several months ago of being destined for greatly increased development work, is very quiet at the present time and this inactivity will probably continue for some time due to deep sand exploitation at Long Beach. The Union is the only concern which is running more than two strings of tools in the Richfield district at the present time and the development work of this concern should result in the completion of two or three new wells within the next 15 days. The Continental Oil Co. is putting the finishing touches on the rig for No 1 Mullen, a new well, and this project will be spudded in possibly within the next two weeks.

Montebello

The Standard is abandoning No. 4 Howard & Smith, an edge well in the Montebello Field because of the inability to develop clean sustained commercial production. This well registered an initial daily production of 175 bbls. on a preliminary production test several months ago, but the proximity of this location to the edge of the field prevented sustained production. It begins to look as though the West Coyote Field will witness a slight revival of work as the Standard is rigging up two new wells on the Emery lease and both of them, No. 41 and 42, are scheduled for early spud. The Petroleum Securities is also making preparations to spud in a new hole in this district and this project, No. 1 McNally, will prove a very interesting test to follow due to the fact that production may be anticipated in the second or lower horizon. The Shell is making preparations to complete No. 14 Orange in the Brea Olinda Field and that a new well will be started immediately upon its completion is evidenced by the fact that a rig is going up for No. 17 Orange. The Birch Oil Co. will also undertake a new drilling project in this area and this well may be considered an outpost in as much as it is slightly out of line with the previous trend of development.

Kern River

The crude oil conservation movement undertaken in the Kern River Field during the past week will be reflected in a smaller number of completions out along the West Front where operators have drilled approximately 250 wells during the past two years although development work will continue uninterrupted. There is still considerable undrilled acreage in this area awaiting development and it is the present intention of operators to continue their respective development programs although these new wells will not be actually drilled into completion but will be carried down and cemented just

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IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well, location—	S-T-R	Depth	Status
Associated, No. 1 Cypress, Potrero	34- 2-14	5,408	testing
Associated, No. 2 Cypress, Potrero	34- 2-14	4,511	hd. sd. drilling
Smith & Carpenter, No. 1 Smith, Potrero	35- 2-14	5,282	suspended
World Pet. Co., No. 1 Inglewood, Los Angeles Co.	28- 2-14	3,772	suspended
Mont. Park Oil Co., No. 1 Browning, Mont. Park	26- 1-12	4,260	hd. sd. drilling
Shell, No. 2 Mission, San Fernando	4- 2-15	Rig	rigging up
Andrews, Otis, No. 1 Lancaster, Los Angeles Co.	23- 8-13	2,110	hd. sd. drilling
Woods, D. H., No. 1 Lancaster, Los Angeles Co.	5- 7-10	Rig	suspended
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	4,293	sd. sh. drilling
Dominguez Ext., No. 1 Compton, Los Angeles Co.	27- 3-13	5,510	pipe trouble
San Clemente Oil Co., No. 1 Peck, Hawthorne	20- 3-14	5,765	testing
Shell, No. 1 Dupre, Hawthorne	29- 3-14	5,660	br. sh. drilling
Easton & Smith, No. 1 Calabasas, Los Angeles Co.	19- 1-17	Rig	rigging up
Scott & Currier, No. 1 Hawthorne, Los Angeles Co.	33- 3-14	140	suspended
White Behr, No. 1 Watson, Los Angeles Co.	21- 4-14	4,611	wet
Buttrum, F. W., No. 1 Richfield, Orange Co.	36- 3- 9	4,410	gr. sd. drilling
Ohio Oil Co., No. 1 Anaheim, Orange Co.	9- 4-11	3,500	hd. sd. drilling
California Pet., No. 1 Santa Ana, Orange Co.	34- 4-10	.....	location
Olympic Ref. Co., No. 1 Sunset Beach, Orange Co.	19- 5-11	5,510	may abandon
Kneuper, A. D., No. 1 Seal Beach, Orange Co.	10- 5-12	Rig	rigging up
Getty, Geo. F., No. 1 Seal Beach, Orange Co.	14- 5-12	4,702	hd. sd. drilling
Shell, No. 1 Stern, Orange Co.	22- 3-10	4,503	hd. sd. drilling
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	2,550	hd. sd. drilling
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	3,030	hd. sd. drilling
Davenport O. & G. Co., No. 1 S. Marcos, S. Diego Co.	30-12- 2	380	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	479	hd. sd. drilling
Mills, J. P., No. 1 Pueblo, San Diego Co.	18-15- 3	2,670	hd. sd. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Bolsa Chica, No. 1 Kettleman, Kings Co.	30-23-19	3,502	perforating
General Pet., No. 2 Ochsner, Kettleman Hills	28-22-18	6,755	fishing
South Coalinga, Well No. 1, Kettleman Hills	35-24-19	3,110	suspended
Monocline Dev. Co., Well No. 1, Kettleman Hills	7-21-21	4,308	suspended
McPhail, Hugh, Well No. 1, Kettleman Hills	13-24-18	2,100	suspended
Milham Explt'n., No. 1 Kettleman, Kings Co.	2-22-17	7,070	sd. sh. drilling
Star Petroleum, No. 2 Canet, Ventura Co.	13- 3-23	5,896	hd. sd. drilling
Standard, No. 5 Saticoy, Ventura Co.	14- 2-22	189	sd. drilling
California West. Oil Co., No. 1 Elkins, Ventura Co.	5- 3-19	1,764	hd. sd. drilling
Exline, Emma, No. 1 Saticoy, Ventura Co.	33- 3-21	Rig	suspended
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	4,198	suspended
Parkford, E. A., No. 1 Strathern, Ventura Co.	5- 2-18	4,002	suspended
Shell, No. 1 Strathern, Ventura Co.	6- 2-18	4,700	hd. sd. drilling
American Oil Co., No. 1 Camarillo, Ventura Co.	33- 2-20	171	suspended
Hackworth, J. W., No. 1 Ojai, Ventura Co.	11- 4-23	2,166	hd. sd. drilling
Scott Pet. Co., No. 1 Rincon, Ventura Co.	35- 4-25	3,885	hd. sd. drilling
Shell, No. 2 Oxnard, Ventura Co.	35- 2-22	1,168	abandoned
Shell, No. 2 Gruber, Ventura Co.	26- 2-22	Mtl.	building rig
Shell, No. 2 Berrywood, Moorpark	32- 3-20	6,770	hd. sd. drilling
Miley Oil Co., No. 1 Red Mountain, Ventura Co.	7- 3-23	980	suspended
McAdams, J. E., No. 1 Buttonwillow, Kern Co.	26-29-23	5,700	show. gas
Milham Explt'n., No. 1-A Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Explt'n., No. 2 Buttonwillow, Kern Co.	8-28-23	2,730	gas well
Milham Explt'n., No. 3 Buttonwillow, Kern Co.	8-28-23	2,694	gas well
Milham Explt'n., No. 4 Buttonwillow, Kern Co.	5-28-23	2,622	show. gas
Doheny-Stone, No. 1 Salisbury, Kern Co.	7-29-24	4,150	redrilling
South. Calif. Gas Co., No. 1 Buttonwillow, Kern Co.	4-28-23	2,782	sd. drilling
Richfield Oil Co., No. 1 Semitropic, Kern Co.	21-26-22	1,620	suspended
Pacific Eastern, No. 1 Union Ave., Kern Co.	6-30-28	5,640	suspended
Pacific Eastern, No. 2 Union Ave., Kern Co.	6-30-28	4,500	testing
Jackson & Chamberlain, No. 1 Bakersfield, Kern Co.	19-29-28	601	sd. sh. drilling
O'Donnell, J. E., No. 1 Greenfield, Kern Co.	31-30-28	3,193	hd. sd. drilling
Superior Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,611	hd. sd. drilling
Stabler, W. W., No. 1 Comanche Point, Kern Co.	23-32-29	2,010	fishing
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	3,236	testing
Shell, No. 1 Mon Bluff, Kern Co.	3-28-28	4,200	fishing
North American, No. 1-A Delano, Kern Co.	5-25-26	4,918	br. sh. drilling
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	4,050	hd. sd. drilling
Barneyberg Oil Co., No. 1 Brown, San Luis Obispo	26-32-14	2,414	hd. sd. drilling
Richfield, No. 1 Wreden, San Luis Obispo Co.	10-29-17	3,130	suspended
Richfield, No. 1 Carissa, San Luis Obispo Co.	15-29-17	3,263	br. sh. drilling
Union Oil Co., No. 1 Huasna, San Luis Obispo Co.	34-32-15	1,533	hd. sd. drilling
San Luis Synd., Well No. 1, San Luis Obispo Co.	29-31-15	2,901	sd. sh. drilling
Sequoia Oil Co., Well No. 1, San Mateo Co.	13- 7- 5	1,430	plug back
Shell, No. 1 Cowell, San Mateo Co.	8- 6- 5	5,906	fishing
Shell, No. 1 Cowell, San Mateo Co.	8- 6- 5	.....	location
Shell, No. 1 Butts, San Mateo Co.	16- 6- 5	2,580	hd. sd. drilling
Shell, No. 1 Mossi, Petaluma	8- 5- 6	1,704	hd. sd. drilling
R. Y. Hanlyn, Well No. 1, Alameda Co.	3- 5- 2	142	sd. drilling
Thomas & Hammill, Well No. 1, Alameda Co.	16- 3- 3	1,070	water trouble
Tepesquit Oil Co., Well No. 1 Santa Barbara Co.	3- 9-32	1,880	hd. sd. drilling
Becker, Geo. F., No. 1 Summerland, S. Barbra Co.	33- 4-25	3,045	testing
Twin State Oil Co., No. 1 Modoc, Santa Barbara Co.	20- 4-27	2,923	hd. sd. drilling
Fort Wayne Synd., No. 1-A Goodcell, Madera Co.	22-10-17	.....	location
Continental Oil Co., No. 2 Smith, Colusa Co.	31-18-4	4,300	clean. out
Colus Oil Co., Well No. 1, Colusa Co.	31-15- 4	274	hd. sd. drilling
Nuna Oil Co., Well No. 1, Colusa Co.	19-15- 4	348	sd. drilling
Marland Oil Co., No. 1 Bradley, Monterey Co.	32-24-11	2,780	hd. sd. drilling
North Counties Oil Co., Well No. 2, Humboldt Co.	36- 2- 1	2,070	hd. sd. drilling
Humboldt Oil Co., Well No. 1, Humboldt Co.	6- 2- 1	3,031	hd. sd. drilling

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Dy. ave.	Total last week	Dy. ave.	This year to date	Same time last year
Crude oil	78,452	11,207	79,130	11,304	1,594,401	2,289,255
Fuel oil	.....	.....	.....	.....	.....	2,964,021
Diesel and gas oil	62,065	8,866	.....	.....	511,804	1,173,295
Gasoline	312,754	44,679	386,967	55,281	2,741,049	2,136,875
Coastwise—						
Crude oil	201,614	28,802	662,810	94,687	4,480,872	7,607,628
Fuel oil	309,881	44,269	416,461	39,494	4,705,741	3,718,638
Diesel and gas oil	.....	.....	24,609	3,516	330,704	67,969
Gasoline	270,454	38,636	260,335	37,191	3,177,280	2,372,617
Kerosene	.....	.....	.....	.....	22,865	43,103
Tops	.....	.....	46,574	6,653	171,566	.....
Exports—						
Crude oil	74,118	10,588	.....	.....	598,301	942,153
Fuel oil	361,703	51,672	483,734	69,105	6,560,803	7,527,686
Diesel and gas oil	181,332	25,905	59,902	8,557	818,618	293,722
Gasoline	127,805	18,258	.....	.....	1,186,538	514,792
Tops	.....	.....	.....	.....	.....	72,371
Kerosene	.....	.....	319,784	45,683	1,209,237	702,126

TANKER SHIPMENTS FROM SAN FRANCISCO AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	342,425	251,458
Gasoline	.....	.....	80,123	11,446	410,466	811,430
Lubricants	.....	.....	.....	.....	138,769	111,970
Coastwise—						
Fuel oil	150,011	21,430	82,988	11,855	1,048,521	1,737,034
Diesel and gas oil	1,467	210	8,024	1,146	87,986	134,308
Gasoline	42,385	6,055	30,922	4,417	823,042	1,353,720
Kerosene	4,902	700	.....	.....	73,223	30,674
Exports—						
Crude oil	.....	.....	.....	.....	25,029	.....
Fuel oil	.....	.....	75,116	10,745	533,062	497,227
Diesel and gas oil	.....	.....	.....	.....	10,400	.....
Gasoline	78,747	11,250	.....	.....	1,219,412	1,087,635
Kerosene	.....	.....	140,682	20,097	282,102	452,695
Lubricants	.....	.....	.....	.....	.....	9,120

Three Deep Tests Drilling in Gulf Area

Spindletop Hole May Be Carried Down to 10,000 Feet. Deepest Test at Pierce Junction Has Been Abandoned

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Apr. 9.—Although field operations as a whole in Gulf coastal territory were rather quiet the past week, three tests below a mile deep figured in the news and drew attention to the deeper drilling going on in this district. Possibilities that one of these tests might go to a depth of 10,000 feet seem likely.

A deep drilling record for the Pierce Junction Field, south of Houston, has been set in Rio Bravo Oil Co.'s No. 101 G. H. & S. A., which was abandoned during the week after going to a total depth below 6,170 feet. This, the deepest test drilled there, is on the extreme north of the northwest flank pool.

Another deep Pierce Junction test, however, offered possibilities of extending production 500 feet to the southwest, although as the week closed the outcome of this test was somewhat uncertain. This well, Leonard and associates' No. 1 Settegast, which was reported to some companies as having been brought in last Tuesday, has been swabbing with a showing of oil at a total depth of 5,935 feet.

As the hole is in a shale which shows a tendency to heave, the operators have had some difficulty in their efforts to bring it in and have been working on it for over a week. While the screen was put on bottom satisfactorily it is hard to keep open and Saturday had to be washed.

That Yount Lee Oil Co. may carry out at this time its long cherished desire to drill a test to 10,000 feet at Spindletop was indicated during the week when it continued drilling in its No. 54 Gladys City. This test entered an oil sand below 6,000 feet, but now is drilling deeper below 6,200 feet.

This test is one of the furthest north tests so far drilled in the southwest flank pool being developed steadily by that company. Another deep test several hundred feet still to the north is The Texas Company's No. 1 Gladys City. This test has just set 9¼-inch casing and now is drilling below 3,700 feet.

South Liberty Disappointment

Further disappointment was given in the mile north extension of the South Liberty Pool during the week when The Texas Company abandoned its No. 3 Green in cap rock at 2,792 feet. This test is just 50 feet south of No. 1 Green, which started drilling in that district when it came in flowing better than 2,000 bbls. daily of pipe-line oil. The abandoned well failed to find the 2,280-foot sand from which No. 1 Green is producing and also the 1,970-foot sand from which Sun Oil Co.'s No. 1 Abshier, a south offset, is producing.

This offers another irregularity for the pool as No. 3 missed all three sands so far encountered by other tests all within a radius of 150 feet, and directly between two producers hit the cap rock of the salt. No. 1 Green, which has stopped flowing two times, is on the pump now making around 500 bbls. daily, and the Sun company's well is flowing around 100 bbls. Abercrombie & Harrison's No. 1 Lacour, a west offset to the Sun well, also still is flowing around 50 bbls. from its sand at 2,780 feet. The latter three are the only producers in the district, each making an entirely different grade and gravity of oil. The Lacour well tests nearly 40 gravity.

Four other tests still are drilling there: The Texas Company's No. 2 Green, offsetting the Abercrombie & Harrison producer; Sun company's No. 2 Abshier; Abercrombie & Harrison's No. 2 Lacour, and The Texas Company's No. 1 Pickett. No. 2 Green is in shale at 2,948 feet and also has missed all sands encountered in the other tests and particularly the 2,780-foot sand in the Abercrombie & Harrison No. 1 Lacour, which it offsets.

Pierce Junction Completion

Completions during the week were featured by Anderson & Plummer's No. 2 Whitehead at Pierce Junction which was brought in Tuesday flowing 2,500 bbls. of pipe-line oil daily at 4,881 feet. Two other smaller wells were added at Pierce Junction; a 1,200-bbl. well at Hull, and a 950-bbl. producer at Orange. All other completions made less than 100 bbls. of oil each.

Howeveer, as the week closed two Nash Dome tests were in oil sands which looked favorable for good producers although one was engaged in a fishing job with drill stem twisted off.

Rumors were current that a new dome had been discovered near Thompson, southeast of Richmond, Fort Bend County, and while some of the larger companies were doing some leasing, the rumor of the dome discovery was unverified. A reported gas showing in a water well being drilled there attracted some interest to that locality.

Production Unchanged

Despite substantial increases at Pierce Junction and at South Liberty, the daily average production of Gulf Coast fields as a whole was virtually unchanged for the week ending April 7 with a total of 125,914 bbls. The increases at Pierce Junction and South Liberty were offset by small declines in other fields.

The increase at Pierce Junction was due largely to Anderson & Plummer's 2,500-bbl. producer brought in early in the week together with a number of smaller producers. At South Liberty, The Texas Company's No. 8 Staiti, which came in a 2,000-bbl. well, is holding up and accounting for that field's greater production. Daily average production by fields was:

	Bbls.
Spindletop	37,200
Saratoga	1,099
Batson	1,427
Goose Creek	7,390
Sour Lake	3,465
Hull	11,459
Big Creek	1,610
Dewalt	350
Columbia	7,878
Humble	3,369
Pierce Junction	15,137
Blue Ridge	5,900
Markham	300
Orange	4,343
Damon Mound	825
Dayton	197
South Liberty	4,180
High Island	213
Boling	2,324
Nash Dome	1,200
Barber's Hill	600
Vinton	4,566
Starks	190
Edgerly	1,133
Evangeline	1,047
Lockport	4,381
Sulphur	1,210
Hackberry	1,100
Bayou Boullion	1,786
Miscellaneous	135
Total this week	126,914
Total last week	125,897
Increase	17

Daily average production in Southwest Texas fields increased 177 bbls. during the week, while that in East Central Texas fields fell off 224 bbls. Daily figures by fields were:

Southwest Texas

Somerset	2,793
Lytton Springs	1,448
Dale	1,320
Luling	13,890
Miscellaneous	7,700
Total this week	27,151
Total last week	26,974
Increase	177

East Central Texas

Mexia	7,426
Cedar Creek	600
Nigger Creek	745
Currie	501
Wortham	1,920
Richland	522
Powell	11,795
Total this week	23,509
Total last week	23,733
Decrease	224

Allen Dome Test

On the Allen Dome, Brazoria County, Roxana Petroleum Corp.'s No. 1 Random was bailed in during the week but is making only dry gas with a rock pressure of 1,170 pounds. It is being allowed to blow to see if it will start making oil. This is from a sand at a total depth of 4,942 feet. This is the test which blew out while drilling at 4,931 feet but which after the gas was killed and a fishing job was unsuccessful was sidetracked at 4,647 feet and drilled to the sand again. No. 4 Allen, on the same dome, is coring brittle shale with an odor of gas and oil at 4,925 feet.

At Lost Lake, Pure Oil Co. is pulling screen in its No. 1 Lost River and will deepen the hole. This test, the first on the dome, showed sufficient oil when bailed in the sand at a total depth of 3,604 feet to justify a small pumper, it

(Continued on Page 130)

SOUTHEAST OHIO STILL MOST ACTIVE; PERRY COUNTY HAS GOOD WELLS

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Apr. 9.—The eastern fields furnished fewer completions than the previous week, but there were more good producers, one a near gusher, and the volume of new production was quite a good deal more. Perry County, Ohio, continues to complete the most wells and is the most active of any in the eastern fields. The new production is more than from all other districts combined. There are close to 20 rigs up and test wells drilling in Harrison Township. Outside of southeast Ohio, there is little new work starting.

Best Wells for Week

All but one of the good wells completed during the week are located in southeast Ohio. In the NW of Section 21, Harrison Township, Perry County, William Cline and others completed in the Clinton sand a test on the F. W. Griswold farm. The well started at gusher speed after shot and flowed 345 bbls. the ensuing 24 hours. The initial production of this well established a record as the largest since the first of the year.

In the same township, the Bloomingville Oil Co.'s test on the Floyd Brown farm flowed 35 bbls. the first 24 hours after shot in the Clinton sand. In the SW of Section 2, Cross Creek Township, Jefferson County, A. H. Sutton and others completed and shot in the Berea grit a test on the Charles Williams farm. It produced 25 bbls. the first 24 hours and is much larger than the average Berea grit wells.

In the NW of Section 21, Harrison Township, Perry County, C. M. Bennett, trustee, has completed and shot in the Clinton sand a test on the Mayme Pickens lot. It flowed 195 bbls. the first 24 hours after shot.

In the NW of Section 21, Shenker, Bauman and others have completed a test on the Leo Mead farm. It produced 195 bbls. the first 24 hours after shot in the Clinton sand. In the same quarter and section, the Whitmer Oil & Gas Properties has a well good for 50 bbls. a day on the Leota France lot.

In Lot 287, Sutton Township, Meigs County, the Pure Oil Co. completed a duster in the Berea grit at No. 3 on the Anthony Salser farm. In Lot 10, Section 10, Monroe Township, Holmes County, the Empire Gas & Fuel Co. has a duster in the Clinton sand at a second test on the M. G. Bird farm.

In Harrison Township, there is more test work starting in addition to that previously reported. C. M. Bennett, trustee, is due in the sand on the Mayme Pickens farm. The J. S. M. Oil & Gas Co. is drilling tests on the Floyd Springer and J. J. Tysinger farms. Scott Howe'l and others are drilling on the Burley-Winters farm. The Wiser Oil Co. is drilling on the R. D. Brown farm. J. W. Leonard has started to drill on the David Allen farm. The Ohio Fuel Supply Co. has a rig completed on the B. F. Brown farm. Miller, Jewell and others have started to drill on the J. H. Crider farm. In Bearfield Township, the Wiser Oil Co. has started to drill on the Laura B. Clark farm.

Light Pumper in Meigs County

In the NE of Section 14, Salisbury Township, Wheeler & Griffith have completed a test on the J. H. Wells farm. It is a very light pumper in the Berea grit. In Addison Township, Gallia County, the Ohio Fuel Supply Co. is drilling a test on the C. C. Girst farm.

In Independence Township, Washington County, John Grau and others have the rig completed for a test on the Henry Steinhoff farm. In the same township the Henderson Oil Co. and others are drilling a test on the John Berge farm. In Fairfield Township, Ross Brothers are drilling a test on the Finley Rowland farm.

New Work in Perry County

Perry County has more new work under way and starting than all other districts in southeast Ohio combined. Nearly all are located in Harrison Township. The Wehrle company is due in the Clinton sand at tests on the A. M. Rodgers, George McClelland and Carrie Worthington farms and has a rig up on the Claude A. Pitcher farm. The Whitmer Property, trustee, is drilling tests on the C. A. France, William Kester and M. Young farms. The same company has a rig up on the Jennie Nelson farm. The Hillside Oil Co. is drilling on the Retta Hankinson farm. The same company has a rig completed on the Crooksville water works property.

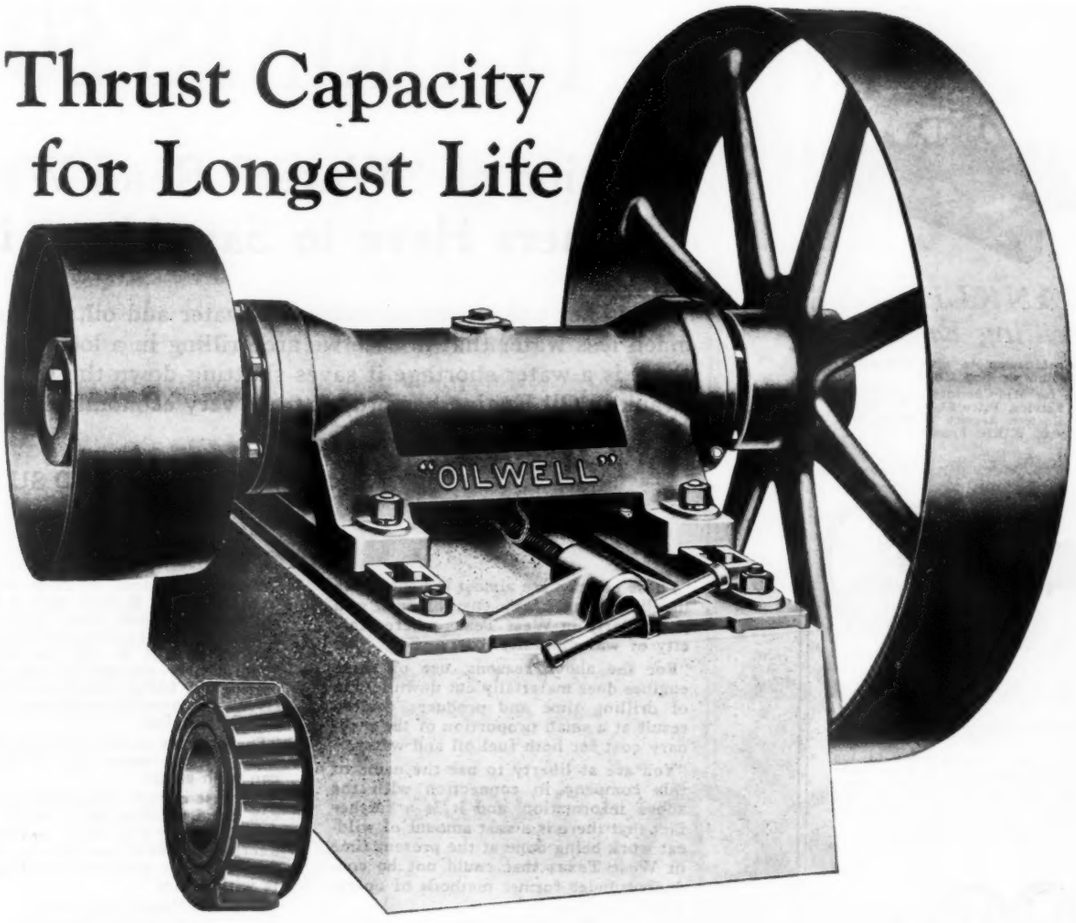
The Royal Oil & Gas Co. is due in the sand on the A. R. Vespers farm. The Kachelmacher estate is drilling on the Muskingum Pottery Co.'s property. The foregoing is only a partial list of the test work drilling and starting in Harrison Township.

Gallia County

In Section 16, Addison Township, Gallia County, the Ohio Fuel Supply Co. has completed No. 3 on the Albert Roush farm. It is a gasser in the Berea grit good for 250,000 feet. In Section 3, Trim-

(Continued on Page 87)

Thrust Capacity for Longest Life



Heavy, whipping belts and pounding drives are sure to produce thrust and shock. Countershaft bearings must care for thrust and shock, or wear faster than necessary!

Timken Bearings, as every oil man knows, provide full thrust capacity and greater load carrying area, made possible by Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken electric steel.

This exclusive combination means highest endurance and great freedom from friction, achieved in simple, compact, perfectly closed mountings. It means that lubrication is needed at rare intervals only, and that all possible power is saved.

Timken economies are built into countershafts and other equipment by the Oil Well Supply Co. The extra value of equipment built around Timken Bearings makes them more widely used in the oil fields than all other anti-friction types combined!

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

"The Desert of Sahara Would -IT DRINKS SO

Talking of "Water" Read What Others Have to Say About it

"It has not only saved us money on water and oil, but uses so much less water that in case we are drilling in a locality where there is a water shortage it saves shutting down the well. The Franklin Oil Engine has proved to be very economical."

Yours very truly,

(Signed) SHAWVER AND SUTTER
By: Bell

"These engines are almost indispensable in eliminating heavy cost of fuel, and particularly in West Texas where scarcity of water usually exists.

"For the above reasons, use of these engines does materially cut down length of drilling time and produces desired result at a small proportion of the ordinary cost for both fuel oil and water.

"You are at liberty to use the name of this company in connection with the above information, and it is a further fact that there is a vast amount of wildcat work being done at the present time in West Texas that could not be conducted under former methods of operation."

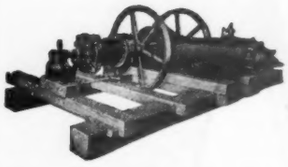
Yours very truly,
PLATEAU OIL COMPANY
(Signed) C. R. Tyrrell,
Vice President.

"We are drilling a deep test near Arkansas City, Kansas, with a Franklin Oil Engine. Some time ago we drilled a well in this locality with steam and the water was so bad we were shut down nearly one-half of the time repairing the boiler, which is very expensive. This trouble is all overcome with the Oil Engine.

"There is no question in my mind but what we can make hole as fast as we can with steam.

"We just completed a well to the Wilcox Sand, drilling to a depth of 3,100 feet in forty-five days, saving on an average of $20.00 per day on water and fuel oil, over what we could have done it with steam."

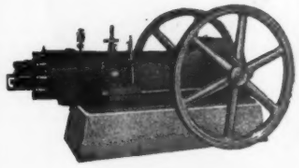
Yours very truly,
(Signed) D. M. SHAWVER
Supt. for Shawver and Sutter.



FRANKLIN Oil Drilling Engine

are sold complete with self-oiling reversible drilling clutch.

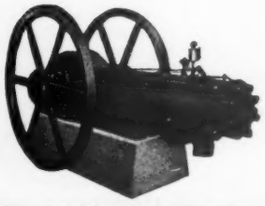
Size for Mid-Continent and Western Service, Price $3,700.00. Sizes for Eastern Service $2,600.00 and $3,350.00 F.O.B. Franklin, Pa.



FRANKLIN Oil Pumping Engine

This light running mate to the drilling engine will do your swabbing and pumping at an even lower cost. H.P. 30, 40, 50 and 75. Can be equipped with one way or reversible Pumping Clutch.

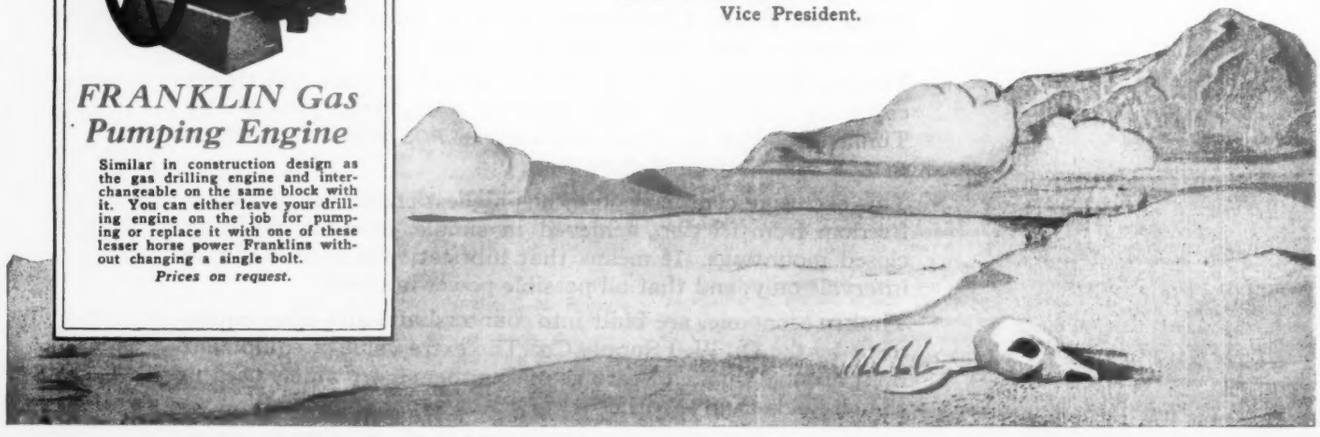
Prices on request.



FRANKLIN Gas Pumping Engine

Similar in construction design as the gas drilling engine and interchangeable on the same block with it. You can either leave your drilling engine on the job for pumping or replace it with one of these lesser horse power Franklins without changing a single bolt.

Prices on request.



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LITTLE WATER

And Where "Gas" is Plentiful We Also Recommend a FRANKLIN

Where gas is available here's the logical power plant for you—the Franklin Valveless Gas Drilling Engine. In principle it is exactly like its oil burnng brother with the added advantage of interchangeabilty.

When the owner of a Franklin Oil Engine goes into a field where gas is cheap, he converts his oil engine in two hours—simply by changing cylinder heads and replacing full pump with magneto.

Whether you use the oil burning or the gas burning Franklin you save money. Fuel, water and lubrication costs shrink. Some users tell us they are saving as much at $20.00 to $30.00 per day on their Franklins.

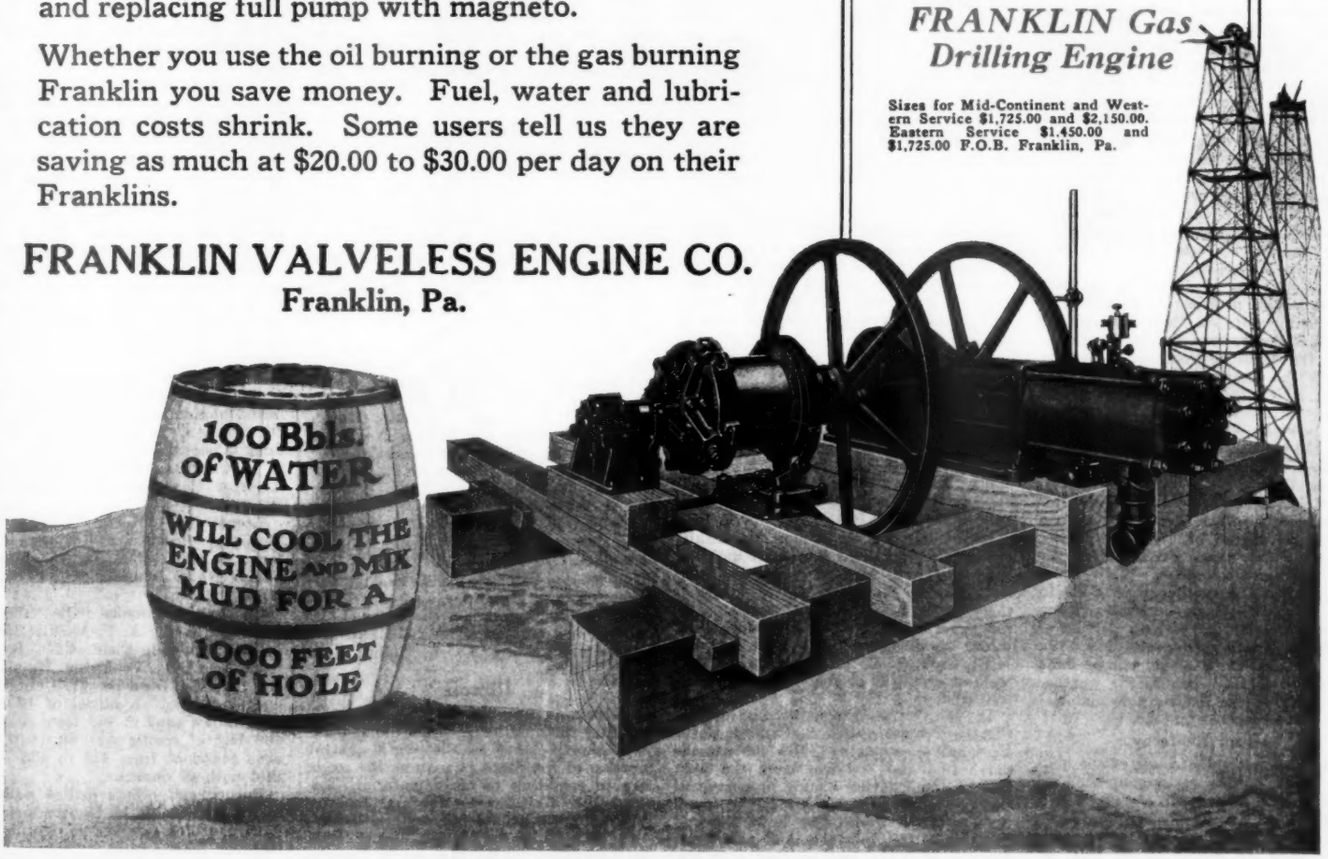
FRANKLIN VALVELESS ENGINE CO.
Franklin, Pa.

10 BIG
FRANKLIN FEATURES

1. Low fuel consumption.
2. Air cooled piston.
3. Bath lubrication.
4. Ability to pull at slow speeds.
5. Minimum parts.
6. Fewer adjustments necessary.
7. Saving in lubrication.
8. No repairing or regrinding of valves.
9. Starts in zero weather as easily as in summer.
10. No technical knowledge necessary to operate.

FRANKLIN Gas Drilling Engine

Sizes for Mid-Continent and Western Service $1,725.00 and $2,150.00. Eastern Service $1,450.00 and $1,725.00 F.O.B. Franklin, Pa.



ed By
PLY COMPANY
All Oil Fields

New Pool in Daviess County, Ky.

Well Near Whitesville Estimated Good for 100 to 150 Bbls. on Pump. Ohio County Now Producing Most Oil

By Whit
Staff Correspondent, Kentucky-Tennessee

WHITESVILLE, Ky., Apr. 9.—One of the important completions of the week in the western Kentucky fields was made by Coomes & McMahan in a test well on the C. M. Jones lease of 112 acres, 3½ miles west and a little south of Whitesville, in Daviess County, and a short distance southwest of the hamlet of Boston. This well went to a total depth of 777 feet and passed through 20 feet of rich oil sand and is estimated good for from 100 to 150 bbls. initial when put on the pump. This well opens up a new pool, being south of the well recently completed by the same people on the Lewis farm, and it now looks as though the territory between the Jones and Lewis farms may prove productive and if so it means a learge area for development work. The Lewis well is reported still making 20 bbls. daily and is supposed to be an edge well for what looks like a new and productive pool. The Ohio Oil Co. owns the Ora Burton lease, adjoining the C. M. Jones lease on the west, and the company will start a well as soon as the material can be put on the lease. The Burton farm contains 130 acres, and Mrs. Burton and children reported the sale of one-half her royalty in the oil on the farm for $6,000 to Mr. McMahan of Owensboro.

Another interesting well in Daviess County is the Buckner-Larue Oil Co.'s No. 1 on the Trodgen farm, in the Hayden Pool, near Andersonville, showing for around 125 bbls.; in fact it did that under pump much to the surprise of the owners It was drilled in several days ago, but just put on the beam.

Ohio County is also looming up with some excellent producers. This county is producing more oil than most of the counties of the western division combined, due to the Ambrose Pool and its extensions in the vicinity of Mount Moriah Church, which is to the southeast, and to the northwest toward Bell's Run, where Lowman & Daly recently brought in a 150-bbl. initial producer on the Ollie Ezell 50 acres. In the heart of the Ambrose Pool, No. 25 on the Mary J. Elmore 100 acres showed 100 bbls. initial and No. 2 on the Cody Hoover farm produced an initial of 150 bbls. These three wells are miles apart and makes a big territory look good. While there are a great many drilling operations in Ohio, Hancock, Daviess, McLean and other counties in the northern portion of the western Kentucky division, it is nothing to compare with what will be done in that line just as soon as the weather settles and the side roads get so material can be handled to advantage.

Eastern Kentucky

Light wells were the result of the drill in all parts of the eastern division of Kentucky. In District 5 of the Monticello Field of Wayne County, the J. C. Blair Oil Co.'s No. 4 on the J. F. Gregory farm showed an initial of 10 bbls. as did the Davey Oil Co.'s No. 9 O. E. Gregory farm, same district.

In the Ervine Field, District 8, Estill County, Brenner, Adams and others' No. 12 Kate Sawyer farm is a 1-bbl. pumper and the Superior Oil Corp. has one of the same kind in No. 23 on the Thomas Henderson farm.

In the Salyersville Field of Magoffin County, District 30, the S.T S. Development Co.'s Nos. 1 and 2 Forest Colvin farm, No. 1 Sallie Colvin and No. 1 Dan Davis farms are all 2-bbl. pumpers.

In the Torrent Field of Wolfe County, District 20, Brenner, Adams and others No. 1 Bush-Spencer farm showed an initial of 7 bbls., with No. 2 drilling.

In District 21, Floyd-Knott Counties, the Ivyton Oil & Gas Co. has an average gas producer at No. 1 on the J. N. Allen farm. United Carbon Black Co. is drilling No 1 S. M. Prater and No. 1 James Allen farms.

Week's Work

A summary of the week's work in the Kentucky fields show 36 completions, 22 producers with an initial production of 805 bbls., 13 dry holes and 1 gas well. Compared with the previous week, there were 11 more completions, 7 more producers, 431 bbls. more new production, 4 more dry holes and the same number of gas wells. The wells were distributed by counties and districts as follows:

County—	Oil Comp.	Wells Prod.	Dry	Gas
Ohio	18	8 532	10	0
Daviess	5	4 185	1	0
Hancock	2	0 0	2	0
Warren	1	1 1	0	0
Johnson-Magoffin	4	4 8	0	0
Wayne	2	2 20	0	0
Estill	2	2 2	0	0
Wolfe	1	1 7	0	0
Floyd-Knott	1	0 0	0	1
Tontal	36	22 805	13	1
Last week	25	15 374	9	1
Difference	11	7 431	4	0

Western Kentucky

The big drilling campaign in Kentucky at this time is in western Kentucky, mostly in Ohio, Daviess, Barren and McLean Counties with a few wells drilling in other counties and every well drilled is being watched with much interest, especially those outside of defined limits. Hopes are for the opening of numerous new pools during the coming summer and outside capital has never taken so much interest in the western part of the Blue Grass State. Some of the largest operating concerns in the country are in the field.

Ohio County

New work keeps spreading over a large area in Ohio County, and while a number of rank dusters are encountered, some very nice wells are found to make up for the bad ones. In the northwest edge of the Ambrose Pool, southeast of Bell's Run, Lowman & Daly's No. 4 on the Ollie Ezell farm is reported a 150-bbl. initial producer from a depth of 747 feet and given a shot of 120 quarts. In this well a string of 670 feet of casing was set; sand was found from 683 to 730 feet and drilled 17 feet below the bottom of the sand.

Wood Oil Co.'s Nos. 25 and 26 on the Mary J. Elmore 100 acres, in the heart of the Ambrose Pool, are credited with production of 100 and 20 bbls., respectively, with No. 27 drilling. Same company's No. 5 on the J. C. Smith 151 acres in the Sunnydale Field, same county, was a dry hole at 747 feet, and its No. 1 on the John Cameron 95 acres, same field, proved dry at a depth of 764 feet.

The Ohio Oil Co.'s No. 1 on the Rosette Smith farm, came in a dry hole, and No. 1 on the Ray Rhodes farm, near Aetnaville, is reported in the sand.

James C. Ellis' No. 5 on the J. Spence Bartlett farm, in the Ambrose Pool, is reported dry and abandoned, while his No. 3 on the J. T. Hoagland is reported around 50 bbls. initial. No. 1 on the Griffith heirs farm is also a duster.

Rex-Pyramid Oil Co.'s No. 3 on the Lake-Ambrose farm, in the Ambrose Pool, is credited with an initial production of 80 bbls., and drilling No. 13 on the W. S. Ambrose farm in the same pool.

S. H. Russell and others' No. 6 on the A. P. Kelly farm is reported at 30 bbls. initial production, while the White Plains Oil & Gas Co.'s No. 4 on the Ida Kelly farm is showing for a good producer and is in the King Pool, northwest of the Ambrose Pool and west of the Midkiff Pool.

Leeper Oil Co.'s No. 1 on the L. C. McKinley farm, north of the Foreman farm, is rated good for 15 bbls. under pump. No. 2 is under way on the same farm.

Chenault & Brooks drilled a dry hole in a test on the A. F. Midkiff 130 acres in the Sunnydale Field at 595 feet.

In the King Pool, the Penn-Indiana Oil Co.'s No. 5 on the Will Griffith 270 acres produced an initial of 17 bbls. in the shallow sand at 444 feet. A string of 406 feet of casing was set in this hole, sand found at from 414 to 435 feet and shot with 40 quarts.

Spence and others drilled a dry hole in No. 1 on the M. M. Hoover farm. Wade Norris drilled another in No. 1 on the Gardner Brown farm.

The Boston-Southwestern Oil Co. drilled a dry hole in No. 6 on the Mary E. Wilson 174 acres, in the Sunnydale Field, at a depth of 426 feet. This lease was formerly drilled by Earl Potter.

Daviess County

The most important of the late wells in Daviess County is the test, over a mile in advance of production, drilled by Coomes & McMahan on the C. M. Jones 112 acres, and making an excellent showing, but the exact production will not be known until the well is put on the pump; but it is enough to bring an increase in

(Continued on Page 177)

STORM DELAYS DEVELOPMENT IN FIELDS OF THE CENTRAL WEST

By Whit
Staff Correspondent, Central West

FINDLAY, Ohio, Apr. 9.—The entire Central West Field has just passed through one of the most disastrous storms in its history, uprooting trees, breaking down trolley and electric wires, and unroofing buildings. Findlay suffered most damage. Lima was also hard hit and no work could be done in any of the Central West divisions, the storm covering parts of Michigan, Indiana, Illinois, Ohio and the more eastern areas.

Just at present little is being done in the way of new field development in any particular quarter. There is a leasing campaign in Monroe County, in the southeastern part of Michigan, also down around Tiffin, in Seneca County, Ohio, where a good well was recently struck in Liberty Township, which is part of the old Lima Field.

In the Lima Field three completions were reported. In Wayne Township, Darke County, Lee A. Watson's test, 200 feet from the south line and 700 feet from the west line of the Marion Murphy farm, in the northwest quarter of Section 5, topped the sand at 1,152 feet and at 48 feet in struck a gas sand that gave forth a small gas producer with a volume of 50,000 feet.

Near Mendon, in Union Township, Mercer County, W. B. Lawrence and others' third well, 350 feet from the north line and 900 feet from the west line of the Thomas Fireovid farm, in the northeast quarter of Section 21, pumped an initial of 15 bbls. from a total depth of 1,184 feet. Sand was topped at 1,142 feet and drilled 42 feet into the Trenton sand.

In the Tiffin Field, in Section 18, Clinton Township, Seneca County, Geyer & Shaull's second test, 100 feet from the north line and 300 feet from the west line of the Charles Shaull property, on the outskirts of the city of Tiffin, found the top of the Trenton at 1,474 feet and drilled 100 feet into the sand at a total depth of 1,574 feet, getting a 20-bbl. pumper.

In Liberty Township, Seneca County and north and west of Tiffin near Bascom, four wells are getting close to the sand and upon these wells depend the future of the promising field to a large extent. The recent completion on the Jacom Kimmett farm, Section 28, of Liberty Township, with an initial natural production of 70 bbls., brought about a strong leasing campaign. It was reported that an offer of $80.000 was made for the lease and well on the Kimmet 80 acres. An offer is also reported of $15,000 for a lease on the Dayton Conner 160-acre farm, the lease being owned by Tiffin, Fostoria and Amsden men, and they would not drop below $25,000. Nearly all the land in Liberty Township has been taken under lease and the summer should see considerable test work done there.

Indiana

Owing to heavy storms only one completion was reported from any section of the Indiana Field, and that was a dry hole drilled by G. H. Danvers in a test on the J. C. Allison farm, Section 35, Veale Township, Daviess County, in the southwestern part of the State. Only one other well is under way in that one-time promising field, which is Hartman and Sargent's No. 2, on the Tillman Gaither farm, Section 22.

In Madison Township, Pike County, in the same area of the State, the Murphy Oil Co., of Pennsylvania, abandoned No. 5 on the Laurence M. Johnson farm, Section 1. In Logan Township, Miller, Davis and others are drilling No. 4 on the James S. Wilson farm, Section 14.

In Washington Township, Gibson County, the Big Four Oil Co. is drilling a test on the J. Jones farm, Section 19, and J. E. Bauers and others are putting down a test on the K. L. Crackel farm, Section 6, same township.

In Section 7, Fairbanks Township, Sullivan County, Baldridge and others are working at a test on the Samuel D. Baum farm, and in Section 35, Hill and others are drilling No. 1 on the F. J. Harris farm.

Illinois

Illinois, in a drilling way, is very quiet at this time, although some test work will shortly start in the south central portion of the State as soon as the roads are in condition to move material. According to Gail F. Moulton and Jackson Young, of the Illinois Geological Survey, the test well on the Martin Wernz farm, in Section 22-11n-11w, or in Darwin Township in the eastern part of Clark County, went to a total depth of 2,288 feet. At 2,274 feet it was in a lime, sandy, gray, hard; little salt water was found and the next 14 feet of drilling was in sandy, gray, very hard, the hole was filled with salt water. The first salt water was found at 835 feet, then again at 1,050 feet, and salt water was encountered at the various depths: 1,085 feet; 1.435 feet; 1,622 feet; 1,923 feet; 1,970 feet; 1,990 feet; 2.021 feet; 2,255 feet; 2,274 feet, and 2,288 feet. In this well 36 feet of 12-inch was set. At 193

(Continued on Page 100)

CHECK COSTLY CORROSION OF PIPE LINES

The useful life of a pipe line can be prolonged. Corrosion *can* be checked. Johns-Manville has developed a method which is effecting large savings throughout the industry by definitely checking pipe line corrosion.

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OIL INDUSTRY SECTION, INDUSTRIAL DEPARTMENT

MEN KNOWN IN OILDOM

John Elbert Elliott

John Elbert Elliott, known throughout the petroleum industry as "Brick" Elliott, seems to be about as well known in the Mid-Continent and Eastern fields as he is in his own bailiwick of California. South America also knows him and it is entirely probable if there is any remote point in the petroleum world where he has not been, the inhabitants there will soon make his acquaintance because he is the owner of a sea going yacht and a big seven-passenger airplane, both of which he uses very frequently for the enjoyment of his friends and himself.

Mr. Elliott, who was elected first vice president of the American Association of Petroleum Geologists at the recent convention in California, is president and manager of the Elliott Core Drilling Company, E. G. B. Oil Syndicate, Elliott Petroleum Corporation, Elliott Extension Oil Company, and Elliott Consolidated Oil Company.

He was born in Bozeman, Mont., May 31, 1887, and was graduated from Stanford University with the A. B. degree in geology and mining in 1911. He then became chief statistician for the Associated Oil Company and in 1912 became assistant chief geologist with the Caribbean Petroleum Company in Venezuela. From 1913 to 1915 he was geologist of the Shell Company of California, becoming chief geologist of that company in 1915, which position he held until 1920. He was associate professor of petroleum technology of Stanford University in 1921, and became president and manager of the companies listed above in that same year.

PERSONAL PARAGRAPHS

F. H. Scott, Fort Worth, Tex., operator, has returned to his offices after a trip into West Texas.

* * *

Joe S. Sidwell, of the Prairie Oil & Gas Company land department, is making a trip of the Texas fields.

* * *

Charles Dean, of the Stearns Rogers Company of Denver, has returned to his office after a trip to the Pacific Coast.

* * *

F. B. Bimel, of the Hope Natural Gas Company forces, has completed a tour of the Oklahoma fields, and is back in Pittsburgh, Pa.

* * *

W. A. Trout, vice president and general manager of the Emsco Derrick & Equipment Company, has returned to California from a tour of the Texas and Rocky Mountain areas.

David Harris, of the Cities Service Company, at Bartlesville, Okla., was in El Dorado, Ark., for a day or two.

* * *

H. D. Easton, consulting geologist, of Shreveport, La., is in Florida doing reconniassance work for Miami interests.

* * *

N. C. McGowen, head of the Palmer Corporation, at Shreveport, La., has returned from a business trip to the East.

* * *

R. B. Pringle, vice president of the Independent Oil & Gas Company, has completed a tour over the Texas properties of his concern.

* * *

M. F. Waters, vice president and general manager of the Smith Separator Company, of Tulsa, has returned from a trip to New York.

* * *

J. C. Maxwell, of Turman and Maxwell, Fort Worth, Tex., has returned to his offices following an extensive trip through West Texas.

* * *

A. G. Nusser, of the land department of the Standard Oil Company at Shreveport, La., has returned to his desk after an operation for appendicitis.

* * *

W. E. Ramsey, of Oklahoma City, Okla., is in the Muskegon, Michigan, Field, and reported to have purchased a block of acreage from A. W. Cripps.

* * *

A. W. Thompson, sales manager of the Westcott Valve Company, of St. Louis, Mo., is back in Tulsa after a three weeks' trip through the West Texas and Gulf Coast fields.

* * *

Charles P. Brandt, old-time Trenton Rock operator, and a resident of Indianapolis, Ind., is in the Muskegon, Michigan, Field, where he is preparing to start operations.

* * *

P. R. Smith, chief scout of the Pure Oil Company in Texas and New Mexico, has returned to his Fort Worth, Tex., headquarters following a trip through West Texas.

* * *

C. C. Pepper, of the Champlin Refining Company, Enid, Okla., has returned from a trip to Fort Worth, Tex. He was accompanied by C. H. Dorr, engineer for the company.

* * *

A. R. Eysell, in charge of the Peerless Oil & Gas Company's San Angelo, Tex., offices, is in New York City on business and will probably return the latter part of the month.

* * *

Mr. McClure, oil operator, of Mendon, Ohio, and Joshua Baily, operator from Celina, Ohio, are looking over the fields out of Owensboro and Hartford, in Daviess and Ohio Counties, Kentucky.

* * *

G. S. Bays, Wichita Falls, Tex., engineer for the McMan Oil & Gas Company, in charge of natural gasoline plants, has returned to his headquarters following a trip through the West Texas area.

* * *

Frank Maire, head of the Lima Oil Corporation of Lima, Ohio, spent a few days in the Muskegon County Field, of Michigan, looking over the big gas well the company drilled in on the Margaret Figge farm.

* * *

H. C. Dorworth, Oil City, Pa., vice president of the Eureka Pipe Line Company, V. S. Swisher, general shipping agent; D. L. Thomas, agent, and J. M. Tussey, treasurer, were Pittsburgh, Pa., visitors recently.

* * *

R. H. Hubbell, president of the Hill-Hubbell Company of San Francisco, Calif., is making a tour of the Mid-Continent oil field, stopping at Tulsa to confer with Glen G. Langan, vice president in charge of the Mid-Continent region.

* * *

Louis Roark, for five years chief geologist of the Kingwood Oil Company, has resigned and will be engaged in consulting geological work with offices at Okmulgee, Okla. Mr. Roark, prior to becoming identified with the Kingwood Oil Company, was in the Roxana Petroleum Corporation's geological department for seven years, and the Gypsy Oil Company's geological department for two years.

Jack Doyle, of the land department of the Humble Oil & Refining Company, at Shreveport, La., has returned to his desk following an operation for appendicitis.

* * *

Herbert Palmer, who has been field superintendent for the Producers & Refiners Corporation in the Oregon Basin Field, has been transferred by his company to a similar position in the Sand Draw Field.

* * *

A. B. Patterson, of Denver, Colo., superintendent of operations in the Rocky Mountain region for the Texas Production Company, has been in New York attending the annual meeting of district superintendents.

* * *

Clyde Gibson, of the accounting department of the Standard Oil Company of Indiana at Casper, Wyo., has sailed for South America where he has joined the accounting department of the Pan American company.

* * *

A. V. Hoenig, vice president in charge of production for the Indian Territory Illuminating Oil Company, is moving from the company's Walker camp in the Bowlegs Pool of Seminole to Bartlesville, Okla., the company's main office.

* * *

John R. McGinley, vice president of the Marland Oil Company, is being transferred from the Tulsa office to the company headquarters at Ponca City, Okla. Mr. McGinley has been in charge of the Tulsa office for four years.

* * *

R. C. Stewart, of Shreveport, La., district superintendent in charge of The Texas Company's operations in North Louisiana, East Texas and Arkansas, attended a meeting of division superintendents of the company in New York.

* * *

L. H. McBee, scout for the Sun Oil Company, with headquarters in El Dorado, Ark., after checking activities in northeast Mississippi and northwest Alabama, has gone to Jackson, Miss., where he will make his headquarters for a while.

* * *

William Miller, old-time operator in the Trenton Rock fields of Ohio, and who has spent the past couple of years in Florida, has returned to Toledo, Ohio, and expects to engage in operations in the Deerfield Field of Monroe County, Michigan, about 30 miles northwest of Toledo.

* * *

Joseph M. Regan, president, his son, T. J. Regan, and Bert Cleveland, sales manager, of the Regan Forge & Engineering Company, San Pedro, Calif., were in Tulsa during the past week in connection with a business tour of the Mid-Continent in which B. H. Barnes of California has been appointed district manager.

* * *

M. A. Arvin, Bridgeport, Ill., representing the White Plains Oil & Gas Company, a subsidiary of the Snowden-McSweeney Company, has established headquarters for Kentucky at the Rudd House, in Owensboro, Ky., where he will remain for several weeks. This firm was an early developer of the Scottsville Field in Allen County, Kentucky.

* * *

Carl C. Adams, petroleum engineer and geologist, of Fort Worth, Tex., who has been conducting magnetometer surveys in southern DeSoto Parish and south of the Pleasant Hill Pool in Sabine Parish, Louisiana, has returned to his office, planning to go back to Louisiana in 10 days or two weeks.

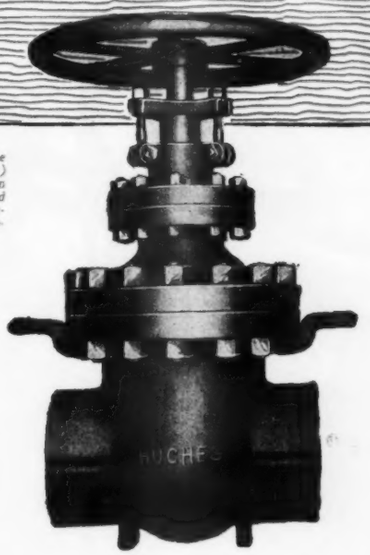
* * *

John G. Bartram, of the geological staff of the Midwest Refining Company, spent several days in Casper, Wyo., recently. Mr. Bartram has been working on a geological survey of southwestern Wyoming and southeastern Utah for several months. He was formerly located with the company in Casper, but now has his headquarters in Denver, Colo.

* * *

A. W. Peake, vice president; W. W. Waldron, production superintendent, and A. M. McCorkle, general superintendent, of the Dixie Oil Company, of Shreveport, La., are spending a few days in the Muskegon, Michigan, Field, to remain until the company's two wells on the Figge and Reeths farms are drilled in. H. D. Crider, geologist of the Dixie company, is also in the field awaiting completions of the wells.

Section of Valve Body (casting) that has been cold twisted and the flange sections bent together.



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Hughes drilling valves and manifold valves are manufactured from a choice grade of cast chrome nickel steel and receive the same careful workmanship as other widely known Hughes products.

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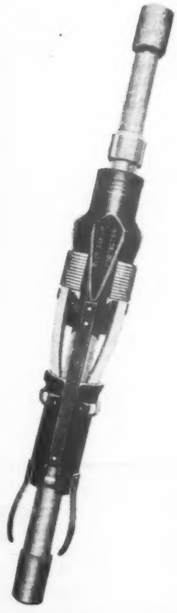

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Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

HAS "SECRET" METHOD OF FINDING OIL

Could you give me through your valued paper any information about the ——— Oil & Gas Co. and Dr. ———, who claims to be able to locate oil wells by some secret method and pretends to have discovered hundreds of them without a single failure?

A friend of mine received the enclosed leaflet and circular letter. What surprises me is that a professor of geology of a state college, Dr. ———, should endorse this mysterious method. On the face of it it appears to me as one of the many fake devices for finding oil.

It is due to these irresponsible pseudo-scientists that even today a good many people are skeptical about geophysical methods based on recognized scientific priniples.—T. R. L.

With regard to this or any other secret method of finding oil and gas it need only be said that a recent bulletin issued by the United States Government stated that no device for finding oil has yet been invented. Geophysical instruments based on scientific principles are being used by geologists as aids in the search for petroleum, but it is not pretended that these instruments are oil finders. Their function is to reveal underground structural features that may or may not point to the presence of petroleum.

It is not within the province of this page to discuss oil stock promotions.

PULLING TUBING IN HOLE TWO YEARS

What would be the best method to use to pull back a string of 600 feet of 3-inch standard pipe that has been in the ground about two years? The formation is shale and lime.—F. G. B.

It depends largely upon the type of equipment you happen to have available. A portable pulling machine such as is used in pulling tubing in shallow wells would be very satisfactory. If you do not have access to such a machine, the simplest method would be to rig up a gin pole, one strong enough to withstand a pull of several tons, and pull the pipe with a tractor and a set of blocks. Before starting to pull the pipe it could be loosened with two ordinary house jacks, care being taken not to apply too great a strain on the pipe, which might be torn in two.

Three-inch standard pipe weighs about 4.1 pounds per foot, including couplings, and 3-inch drive pipe weighs about 7.7 pounds per foot, including couplings. Have the gin pole sufficiently long to permit unscrewing each joint of pipe as it is pulled. Also rig up a casing clamp for holding the string of pipe while unscrewing the upper joint.

ESTIMATING GAS RESERVES

In making estimates of the gas reserves in a gas field, how do you account for the fact that the recovery is usually less than that determined when the estimates are based on the pressure-drop method? Apparently Boyle's law does not apply. What method would you suggest using?—J. H. K.

Boyle's law states that the volume varies inversely with the pressure. In all calculations involving an estimate of gas reserves it is assumed that the reservoir remains the same. This asaumption often is incorrect because, owing to encroaching edge water or bottom water, the reservoir is constantly being reduced in size. The shut-in pressure, which is a measure of the rock pressure, is therefore in excess of what it would have been if the reservoir had not been decreased by the encroaching water.

Estimates were made on one of the major gas fields some time ago by the pressure drop method. These estimates were based first on the production and pressure drop for the first two years. Another estimate then was made based on the first four years. Estimates based on the first two years' production were almost twice as high as those obtained by using the four years' production and rock pressure data. A third estimate then was made, based on the first six years' production and rock pressure decline. The reserves based on this estimate were about 40 per cent as large as those based on four years' production and rock pressure data. It is evident, therefore, from this study that the reserves as determined by this method are in excess of those that will be actually recovered. Recent investigations in another major gas field have definitely proven that the pressure drop method as applied in the past to estimates made of the future gas reserves in this field are approximately 20 per cent too high. In both fields mentioned, edge water undoubtedly played an important part in the calculations.

From the above it would seem that the saturation method for estimating gas reserves is more applicable. However, this method also has its drawbacks. The limits of a field are often difficult to define especially during early development. Also porosity determinations are usually a matter of estimation.

As to the best method to use in making estimates of future gas reserves, the following methods are offered for your consideration:

If it were possible to produce all of the gas in a structure, the entire sand would be filled with water and there would be no more gas reservoir. This, of course, assumes that none of the gas had been trapped by the encroaching water. The average size of the reservoir would, therefore, be one-half of the original size. In this case the pressure drop method which assumes a constant volume reservoir does not apply. In actual practice gas wells cease to produce when the rock pressure has declined to a certain stage. This lower limit may be reduced somewhat by installing siphons or by pumping the water from the wells. This, of course, means added expense and unless justified by the price obtained for the gas, the wells are at least temporarily abandoned until such time as the increased value of the gas justifies the added expense.

From experience and from information gained from near-by fields it is often possible to determine within reasonable limits the pressure at which gas wells become inoperative. Therefore, in making estimates of reserves by the pressure drop method the lower pressure to use in the equation would be that pressure at which it is estimated that the wells will cease producing under normal operating conditions. Gas remaining in the sand at the lower pressure would be regarded as nonrecoverable. However, additional production may be obtained by either siphon installations or pumping to remove at least a part of the water and thus permitting some of the gas remaining in the sand to gain access to the wells.

Another suggested method is to plot accumulated gas produced against the rock pressure, plotting production as ordinate and pressure as abscissae. The continuation of the accumulated production curve would establish the total recovery. By this method it will be necessary to take into account the pressure at which the wells cease to produce and make deductions for gas remaining in the sand.

The amount of water having access to the sand, of course, governs the deviation from the volume as determined by the pressure drop method and where very little or no water is present, the law will apply. The saturation method if correctly applied will result in estimates within 10 per cent of the actual reserve.

Another factor that is not taken into account is the deviation from Boyle's law because natural gases do not follow the law as determined for air. At higher pressures and temperatures the compressibility of the constituents of the gas is greater and may amount to 10 per cent or more. Estimates based on a small pressure drop from the initial rock pressure would therefore be high.

FLOWING WELLS INTERMITTENTLY

Have you any information on how to flow wells intermittently? I heard there is a method of doing this automatically. What is the advantage of the method? Do you get more production?—L. J. S.

There is a method now being used for flowing wells on the gas lift by an automatic control device. Its chief advantage lies in decreasing the compressor capacity as the gas is introduced into each of the wells intermittently. Increases in production have been reported by some of the companies operating wells intermittently. The method is used only on small producing wells, that is on wells whose production ranges from 20 to 30 bbls. to those producing possibly as high as 300 bbls.

The operations are about as follows: Valves on the gas lines leading from the header at the compressor plant to the individual wells are automatically opened and closed by means of an electrical control. A check valve is placed in the gas line between the control valve and the well. A timing device set at the desired point for each well operated, automatically regulates the control valves, thus permitting each well to be operated at the desired rate. The rate of gas input is so timed that the fluid column in the wells is not permitted to drop below a certain level in the well. Thus the starting pressure required is lower than would be required if the fluid were allowed to drop back to the static level. Pressure between the tubing and casing assists in maintaining the fluid column in the tubing above normal.

This system of flowing wells will operate as long as the starting pressure is less than the rock pressure. At higher starting pressure the fluid will be forced back into the sand. Utilization of a flow chamber whereby the fluid can be removed from the flow chamber without applying pressure to the sand has met with some success. A valve at the bottom of the flow chamber permits the oil to build up in the flow chamber. The flow chamber is placed at the bottom of the tubing and is packed off from the casing. Gas introduced between the tubing and casing enters the flow chamber through perforations.

When the fluid has built up in the chamber to the desired height, gas is pumped into the well and the oil is lifted from the chamber. The fluid then is allowed to build up in the chamber again. Unless properly operated, the method is not successful, as pressure caused by fluid remaining in the flow chamber and also remaining gas pressure will not permit the oil to enter the chamber rapidly enough to obtain the desired production.

CONCERNING HELIUM GAS

I am operating some oil property in Kansas and we are all more or less interested in the helium plant at Dexter. Is there any way in which you can tell if helium is in a gas without analyzing the gas? Is it necessary to use an apparatus? What kind is used and how does it operate? Won't any gas containing helium burn?—B. C. T.

Several pieces of apparatus are necessary in order to detect the presence or absence of helium in a gas. If you wish to merely find out if helium is present or absent in a gas, the following apparatus may be used: A battery, an induction coil, a Wallace direct vision diffraction spectroscope, a small vacuum pump, a small glass tube (must withstand heat) and a Dewar tube which is filled with liquid air. For a full description as to method of operation and installation, it is suggested that you write to the United States Bureau of Mines Helium Plant, Fort Worth, Tex.

Some helium-bearing gases will burn, whereas others are noncombustible.

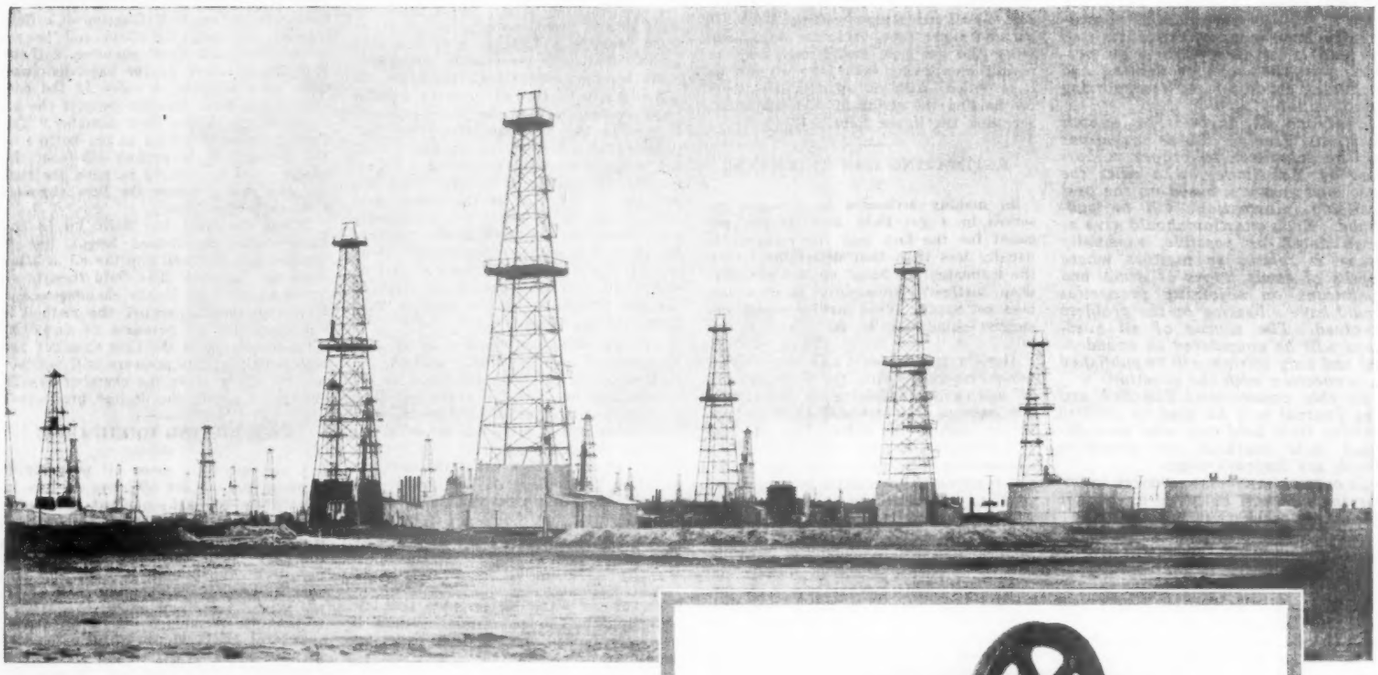
EFFECT OF SALT WATER ON PIPE LINE

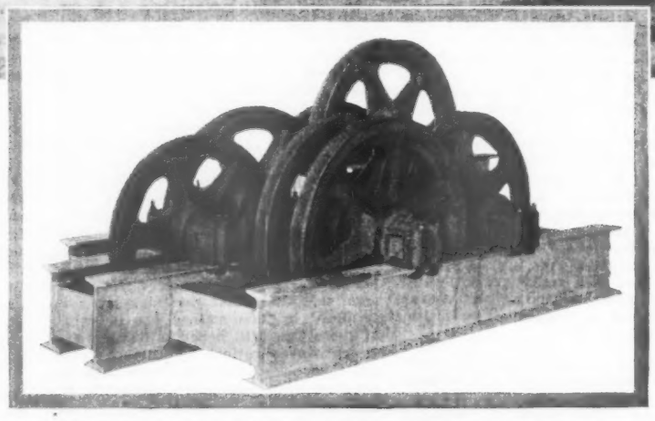
I find that a pipe line of ours is eaten away faster where it passes two wells on our lease than at any other place. In trying to figure out the reason I have noted that in both these spots more or less salt water from the two wells soaks into the ground. Would salt water make pipe rot away any faster than at other places? If it is not the salt water that is causing the trouble, could you give me any idea what it is? And can you suggest any remedy?—P. D. W.

Salt water, with the soil, will cause pipe to corrode with considerable more rapidity than soil damp or wet with fresh water.

Possibly the route of the line across the property can be changed so that it will escape passing through these two spots. This would probably be worth while even if the length of the line were increased. If it is impracticable to avoid all such spots, the line may be protected by a paint or coating designed for such a purpose.

SPEED





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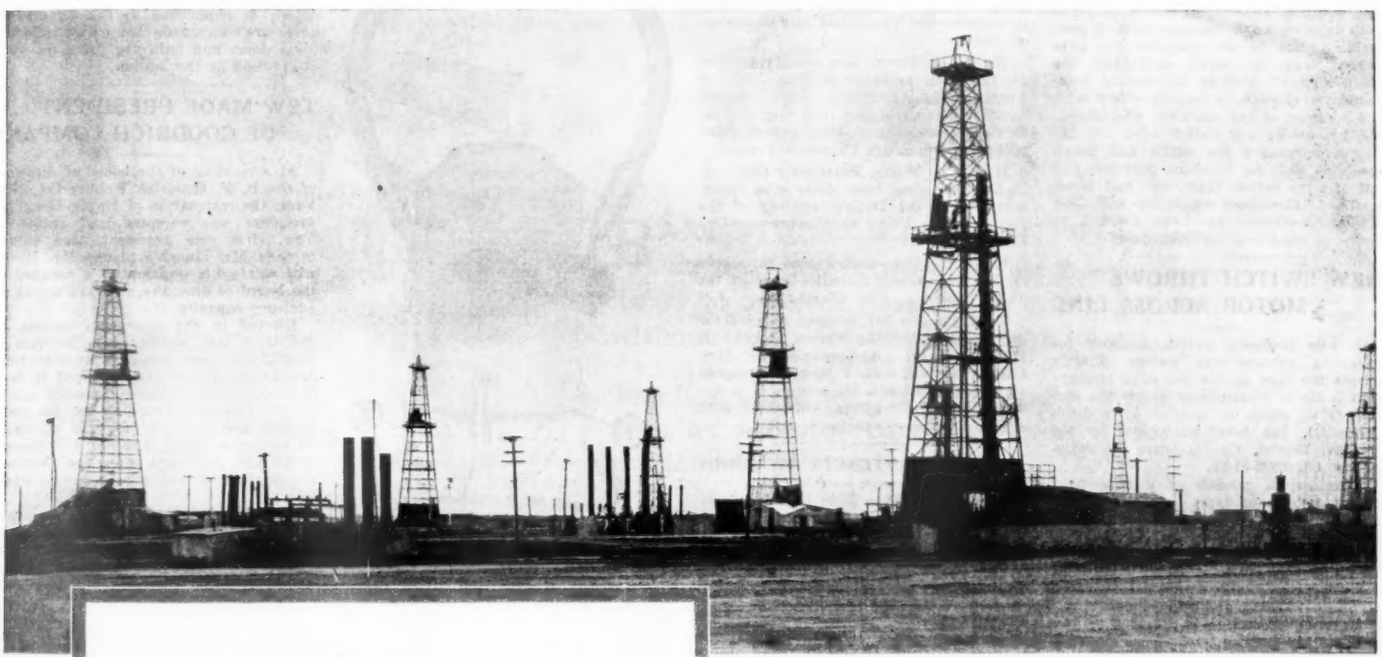
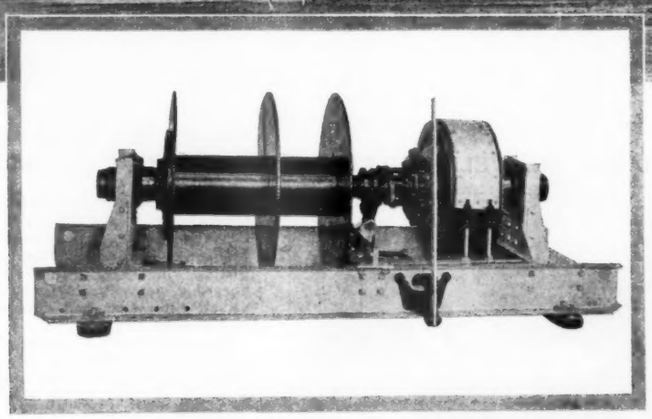




IDECO CHAIN DRIVEN SAND REEL

THE NEW IDECO Chain Driven Sand Reel is capable of lowering a 6″ bailer into the hole at a rate of 3,000′ per minute and will lift the bailer as rapidly as the speed of the engine will permit.

This compact Reel incorporates distinctive features that are found in no other chain driven sand reel. It gives greatest economy of operation, eliminates breakdowns, permits higher operating speeds and makes the Reel adaptable to all makes of equipment.

The International Derrick & Equipment Company

Dallas, Houston, Mexia, Wichita Falls, Pyote, Amarillo, Borger, Corsicana, Pampa, Panhandle, Shreveport, Oil City, Smackover

The largest company devoted exclusively to the manufacture of steel (galvanized) equipment for the oil, gas and artesian industries

COLUMBUS, OHIO — TORRANCE, CAL.

Allen, Sasakwa, Eldorado, Tulsa, Tonkawa, Drumright, Okemah, Seminole, Wewoka, Denver, Casper, Torrance, Los Angeles, Taft, Odessa

California Representative
National Supply Co. *of* California

Export Representation: 74 Trinity Place, New York City — Columbus, Ohio — Los Angeles *and* San Francisco, Cal.

EQUIPMENT AND SUPPLIES

"WELDING ESSENTIALS" SUBJECT OF BULLETIN

"Good Welding Essentials," written by Alexander Churchward, technical director of the Wilson Welder & Metals Co., Hoboken, N. J., has been issued in the form of a bulletin by the company. By way of preface, Mr. Churchward says:

"We have taken for granted that individuals or companies that have owned and operated arc-welding machines for a year or more know the essentials of good welding, but to our surprise we have found that in many instances the knowledge of welding in certain companies is allowed to remain solely with the operator of the machine, who like as not became an arc welder when his employer purchased the outfit and developed his skill by constant practice, and cut and try rather than weld and break methods. For these companies and their welder operators we have decided to write on good welding essentials."

NEW SWITCH THROWS MOTOR ACROSS LINE

A new magnetic switch, suitable for throwing squirrel-cage motors directly across the line, or for use as a primary switch for a wound-rotor motor the secondary of which is handled by a drum controller, has been introduced by the General Electric Co. It bears the designation CR-7006-D-31.

This switch consists of a triple-pole, restricted-blowout type, magnetically operated contactor with normally open interlock, and two hand-reset, temperature overload relays, all mounted on a molded base and enclosed in a drawn-shell, steel enclosing case. It is designed for use on standard voltages and frequencies.

Overload protection is provided by two temperature overload relays which, upon an overload, open the contactor. The operation of either or both relays will trip the contact mechanism so that all phases of the motor are properly protected.

TWO OIL LOSSES DISCUSSED

"Stopping Evaporation and Fire" is a new booklet describing how these two oil industry wastes are reduced by the use of Wiggins floating roofs. The portion of the text dealing with the roof itself is brief, most of the space being devoted to evaporation savings reports, tables and fire tests.

The booklet is profusely illustrated and has a large cutaway drawing on the center spread. It also contains a flow chart which indicates the type of roof recommended for each general class of tanks. Copies of the booklet are being distributed free by the Chicago Bridge & Iron Works.

PYRENE OFFERS NEW MODEL

The Pyrene Manufacturing Co., Newark, N. J., has placed on the market a smaller model Phomene Accumulator for fighting fire with foam automatically or manually. An important feature of the new model, designated as No. 401, is its method of charging. The head is designed to swing on a vertical hinge to one side, permitting full opening to the body of the apparatus. The powder container, designed especially for this model, is inserted directly into the accumulator.

DUDLEY DISTRICT MANAGER

J. A. Dudley, of Tulsa, has been made district manager for the Williamsport Wire Rope Co., his territory embracing Oklahoma, Kansas and West Texas. He has been connected with the company seven years.

BUSINESS NOTES

R. C. Bird, formerly with the Chain Belt Co., of Milwaukee, Wis., has been made traveling sales manager of the D. O. James Manufacturing Co., Chicago, makers of speed reducers and cut gearing.

F. C. Merritt, vice president of the Elliott Core Drilling Co., Los Angeles, Calif., has returned after an extended trip through the Texas territory. The Elliott company maintains branches throughout the Texas and Mid-Continent oil fields.

Waldo D. Emery has been appointed district sales manager in Tulsa for the Foxboro Co., Foxboro, Mass., manufacturer of controlling, recording and indicating instruments. His central office will be at 205 South Cheyenne Avenue.

Merrill P. Wolfe, Praetorian Building, Dallas, Tex., has been made sales representative in the Dallas territory of the Pennsylvania Pump & Compressor Co., Easton, Pa.

E. C. Weyrich, well known in supply circles, has joined the sales staff of the Texas Steel Co., Fort Worth, Tex.

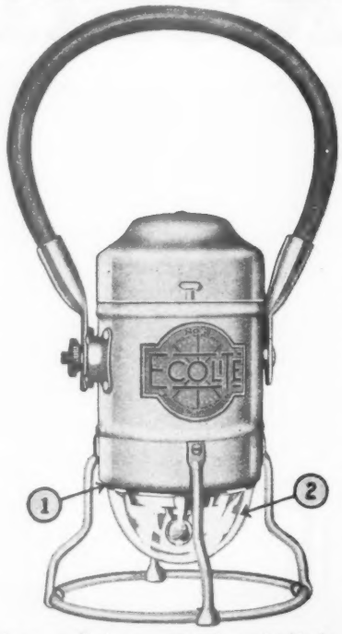
H. E. Cassidy has resigned as advertising manager of the Emsco Derrick & Equipment Co. Accompanied by Mrs. Cassidy, he will make a tour of European oil fields, and upon his return, it is understood, he will become connected with a Los Angeles equipment concern.

PASOTEX CONTRACTS AWARDED

The Pasotex Pipe Line Co., a subsidiary of the Standard Oil Co. of California, has announced the letting of four contracts in the construction of a line from its El Paso refinery to the West Texas oil fields. The contracts represent 15,000 tons of pipe. The contract for the eastern or Wink division, 100 miles long, was awarded to the Oklahoma Contracting Co., of Dallas, Tex.

LANTERN IS PROTECTED FROM OIL-FIELD GASES

Oil operators have wished for an electric hand-lantern that could be used around wells, gasoline compressors, refineries, oil tanks, etc., the lantern to have a reflector protected from the blackening effect of corrosive sulphur gases and a bulb immune from the film ordinarily deposited where these gases are present. To meet this need the Economy Electric Lantern Co., Inc., Chicago, has designed and placed on the market the Eco-Lite vapor-proof electric hand-lantern.



This lantern has a udylite finish inside and out, which the manufacturers say makes it impervious to rust, gas fumes, salt spray and ammonia fumes, and which they assert will not chip, peel or rub off. The lantern has a glass dome on the bottom, held in place by two spring-steel clips. Between the dome and the body of the lantern is a special gasket which will not dry out or rot and which is nonporous so far as oil-field gases are concerned. The entire reflector, glass dome and bulb are protected by a steel stand at the bottom.

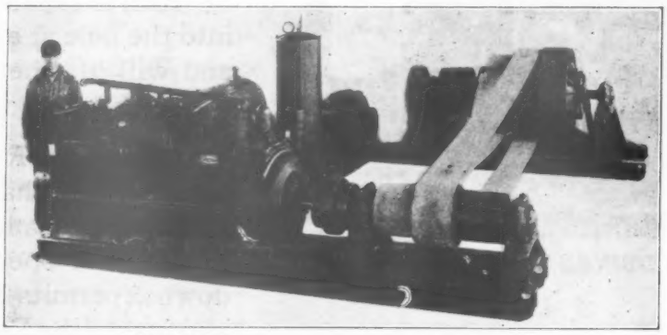
TEW MADE PRESIDENT OF GOODRICH COMPANY

At a meeting of the board of directors of the B. F. Goodrich Rubber Co., New York, the resignation of Harry Hough as president was accepted and James D. Tew, first vice president, was elected to take Mr. Hough's place. Mr. Hough will retain his position as a member of the board of directors and will act in an advisory capacity.

Elected in the emergency caused by the death last September of Bertram G. Work, who was president at that time, Mr. Hough immediately stepped in from the management of the financial affairs of the Goodrich company as its comptroller, and took charge. He continued to supervise the policies of the concern until too strenuous press of business caused him to take a rest several weeks ago.

Mr. Tew has been with the company since he entered the factory in Akron, Ohio, in 1906. Within 12 years, he was appointed superintendent of the tire division of the entire plant. He was made assistant work manager in 1925 and a year later was advanced to works manager, which position he held until he was elected first vice president last year.

NEW DIESEL DESIGNED FOR OIL WELL DRILLING



This 6-cylinder, 90 hp. Fairbanks-Morse Diesel with special governor shows the degree of portability attained by mounting the engine, transmission, fuel tanks and compressor unit on skids.

Only recently has the multicylinder Diesel engine been built in sizes small enough to be attractive for drilling oil wells and having the necessary degree of portability. Such an engine has been developed by Fairbanks, Morse & Co. in 4 and 6 cylinders. This engine is of their standard 2-cycle construction and has a bore of 6 inch and a stroke of 6½ inch, with a continuous rating of 60 and 90 horsepower.

The Continental Supply Co. and the O. C. S. Manufacturing Co. have mounted engines of this type on skids, making them readily portable and furnish these with two-speed countershafts also mounted on skids. An auxiliary unit mounted on skids and consisting of a small gasoline engine, lighting generator and air compressor and a fuel storage tank unit also mounted on skids, makes the complete power equipment of the drilling rig very readily portable.

A special governor provides a greater range of speed control in addition to a selective drilling motion control feature. The range of speed obtained with the drilling governor is from 800 to 250 r.p.m. and the regulation is practically constant over the entire range.

Control of the drilling engine is centered at the derrick although the engine is started with the usual quick opening air valve mounted at the engine. The driller, however, has complete control of the drilling operations from the derrick.

OIL FILTER REMOVES PINT OF ABRASIVES

A pint of abrasive matter is taken from the motor oil by the filter in 10,000 miles driving, according to tests made by C. W. McKinley, research engineer of the AC Spark Plug Co., Flint, Mich., who burned a cloth filtering unit taken from an oil filter that had done service for 10,376 miles.

The residue was composed of one-third sand and two-thirds metal oxides, and was of such a highly abrasive nature that it could be used as an effective knife sharpener.

While the abrasives were trapped by the oil filter before doing damage to cylinders, pistons and other internal parts of the engine, McKinley warns that after about 10,000 miles the filtering unit usually becomes so filled that the oil filter ceases to function and it is necessary that a renewal cartridge be installed.

NEW TYPE WELDER ANNOUNCED

The Lincoln Electric Co. of Cleveland, Ohio, announces a new model of the "Stable-Arc" welder, known as S-1,960. The new unit has a rating of 200 amperes according to N.E.M.A. standards, with a current range for welding duty of 50 to 300 amperes, and operates at a speed of 1,500 r.p.m. Motive power is provided by a four-cylinder Continental Red Seal engine, type H-9.

It is stated by the company that this unit is not designed to replace their present heavy-duty engine driven equipment, but to meet the need for a light but sturdy unit.

BARCO flexible joints on steam lines

Barco joints are made in both flange and screw end types.

BARCO FLEXIBLE JOINTS in long steam lines provide the necessary flexibility to care for contraction and expansion without injury to the pipe or the joint.

The line illustrated is completely insulated with an asbestos covering—even including the joints.

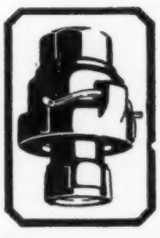
Barco Joints last as long as the pipe line and remain tight with practically no attention. The gaskets are not affected by condensation or by alternating heat and cold.

There are many other applications of Barco Joints in the production, marketing and refining of petroleum products.

Ask for further descriptive matter.

Barco Manufacturing Company
1801 Winnemac Avenue, Chicago, Illinois
Vinson-Canter Co., Tulsa, Okla.

BARCO



Valves and Joints

O&GJ 4-12 Gray

Natural Gas Developments

SHREVEPORT CHOSEN AS NEW HEADQUARTERS

SHREVEPORT, La., Apr. 7.—Shreveport was chosen for the location of the headquarters of the Southern Cities Distributing Co., a subsidiary of Cities Service Co., newly organized gas distributing company, when the gas properties of the Southwestern Gas & Electric Co. were merged with the holdings of the Arkansas Natural Gas Co.

More than 74,000 customers are served by the merged properties, which operate more than 1,000 miles of pipe line over the area.

Formal announcement was made by D. W. Harris, a representative of the new company, that the stockholders of the two merged companies involved had ratified the purchase agreement previously made. The properties acquired by the Cities Service Co. covers an area from Shreveport on the south to Little Rock, Ark., on the north, with branches extending to Pine Bluff, Hot Springs and Texarkana, Ark. Communities served include Shreveport, Texarkana, Pine Bluff, Hot Springs, Hope, Arkadelphia, Atlanta, Little Rock, Longview, Magnolia, Malvern and a number of other cities and towns in Louisiana, Texas and Arkansas.

The property includes distributing pipe lines, six gas compressor stations of 16,000 horsepower and three gasoline extraction plants with a yearly capacity in excess of 5,000,000 gallons. Gas sales last year amounted to 23,000,000,000 feet. In addition, the purchase includes substantial oil producing properties in Louisiana, Texas and Arkansas, and 30,000 acres of undrilled oil and gas land.

The main gas distributing headquarters will be located in Shreveport, with district offices in all important cities served.

ONE GREAT GAS SYSTEM RESULT OF MERGERS

SHREVEPORT, La., Apr. 7.—Consolidation of the various gas producing and distributing companies in which the Moody-Seagraves organization has large or controlling interests into one concern to cut down overhead has an interesting local angle. It unites in one great system gas-producing districts in North Louisiana, East Texas, Southwest and West Texas at Houston via the consolidated companies' lines to Houston from the West Texas fields with Moody-Seagraves' Dixie-Gulf company's line from the Webster, Bossier and Greenwood (Caddo) Fields to Houston and Port Arthur.

Through its half interest in Reserve Natural Gas Co., which becomes part of the Cities Service-Arkansas Natural Gas, Arkansas Fuel Oil and Middle West Utilities gas merger, Moody-Seagraves will own an interest in a pipe-line extension which will serve Memphis.

Looking further into the future, this West Texas-Northwest Louisiana-Arkansas system (for Cities Service will tap northwestern Arkansas production through a subsidiary involved in the merger) will eventually reach St. Louis through connection at Shreveport with a probable line from Richland to Shreveport and Waskom (Texas) and another line from Richmond to St. Louis in which Moody-Seagraves also are interested in getting under way.

However, this Richland-Shreveport line will not be a development of the immediate future, according to Moody-Seagraves representatives here. Questioned on this point following announcement of the West Texas merger, "we may build it some time in the future but not right now." The Richland-St. Louis line will probably be built first.

TENTATIVE PROGRAM AS PREPARED FOR NATURAL GAS DEPARTMENT, A.G.A.

The tentative program for the annual meeting of the Natural Gas Department of the American Gas Association to be held at Dallas, Tex., May 7-10, has been prepared. This program is tentative and subject to change.

Monday, May 7

9 a. m.

Opening of exhibition of appliances and apparatus, Manufacturers Building, Texas Fair Grounds.

10:30 a. m.

Meeting of main Technical and Research Committee and subcommittees, Room 629, Hotel Adolphus.

4:30 p. m.

Meeting of the Managing and Advisory Committee, Natural Gas Department, Room 630, Hotel Adolphus.

6:30 p. m.

Annual dinner, Managing and Advisory Committee, Natural Gas Department, English Room, Hotel Adolphus.

Tuesday, May 8

10 a. m.

Annual meeting, Natural Gas Department, Auditorium, Texas Fair Grounds.

Call to order—N. C. McGowen, chairman, Natural Gas Department.

Invocation.

Address of welcome.

Response—Christy Payne, East Ohio Gas Co.

Address of chairman—N. C. McGowen, The Palmer Corp., Shreveport, La.

Appointment of Committee on Chairman's Address—S. W. Meals, vice chairman, Natural Gas Department.

Report—Memorials Committee.

Address—O. H. Fogg, president, American Gas Association.

Paper—"The History and Problems of the Natural Gas Industry in California." (Author to be announced.)

Address—Alexander Forward, managing director, American Gas Association.

Paper—"Improving the Use of Natural Gas," R. M. Conner, director, American Gas Association Gas Appliance Testing Laboratory.

2 p. m.

Report—Wrinkle Committee, H. J. Struth, chairman.

Paper—"Employes' Performance in the Natural Gas Business," R. W. Hendee, Oklahoma Natural Gas Corp., Tulsa, Okla.

Paper—"Why a Gas Company Should Merchandise and How," T. L. Phillips, Union Gas & Electric Co., Cincinnati, Ohio.

Informal addresses.

Wednesday, May 9

10 a. m.

Paper—"Limiting Factors for Natural Gas Projects," P. McDd. Biddison, Gas Producing Co. of Louisiana, Bastrop, La.

Paper—"Pipe Corrosion and Protection," W. G. Hagan, East Ohio Gas Co., Cleveland, Ohio.

Question discussion.

The remainder of the day will be devoted to the discussion of questions (titles to be announced), with J. D. Creveling of Henry L. Doherty & Co., New York, acting as chairman.

2 p. m.

Resumption of question discussion.

Thursday, May 10

10 a. m.

Paper—"Gas Sands in South Texas," J. B. Best, Houston Pipe Line Co., Houston, Tex.

Paper—"Increasing Use of Natural Gas for Oil Recovery and Its Economic Effect on the Natural Gas Industry," E. O. Bennett, Marland Oil Co., Fort Worth, Tex.

Reports—Main Technical and Research Committee, H. C. Cooper, chairman.

Gas Measurement Committee, F. M. Towl, chairman.

Pipe Line Flow Committee, H. D. Hancock, chairman.

Reports—Committee on Chairman's Address.

Committee on Place of Meeting.

Committee on Nominations.

Election of department officers and Managing Committee.

Report—Committee on Final Resolutions.

Adjournment.

Notes on Business Program

The committees in charge are:

Arrangements—H. C. Morris, chairman; F. M. Lege, Jr.; C. B. McKinney.

Papers—L. K. Langdon, chairman; J. H. Maxon, F. L. Chase.

Exhibition—H. L. Montgomery, chairman; C. C. Cartwright, H. N. Greis, A. W. Leonard, E. J. Schmidt, H. L. Whitelaw, C. W. Berghorn, director of exhibits.

The program may be changed considerably before final printing and should be plainly marked "tentative."

Entertainment Program

Tuesday evening, May 8, 8:30 p. m.—Vaudeville and smoker, Junior Ballroom, Hotel Adolphus.

Wednesday evening, May 9, 6:30 p. m. Annual banquet, Natural Gas Department, Junior Ballroom, Hotel Adolphus.

Speakers—Dan Moody, governor of Texas; Judge C. B. Gilmore, chairman, Railroad Commission of Texas; O. H. Fogg, president, American Gas Association; J. J. Taylor, Dallas News.

Luncheons—Complimentary luncheons will be served on Monday, Tuesday and Wednesday, May 7, 8 and 9, in the Manufacturers Building, State Fair Grounds.

Notes on Entertainment Program—The vaudeville and smoker on Tuesday evening is a complimentary function for which tickets will be issued to all those attending the meeting. An excellent vaudeville program has been arranged by H. C. Morris and F. M. Lege, Jr., the committee in charge. This is a "stag" affair.

The banquet on Wednesday is in charge of L. B. Denning and E. R. Brown. The list of speakers is only tentative at present.

GAS LINE TO SUGAR CREEK

KANSAS CITY, Mo., Apr. 7.—A total of 32 carloads of 24-inch pipe has been received by the Kansas City Gas Co. to be used on the new line being constructed from the present end of the gas company's system near the Sheffield Steel Co. plant to the Standard Oil Co. of Indiana refineries at Sugar Creek, Mo. This line will be 21,000 feet in length and requires a total of 2,000,000 pounds of pipe. The pipe was ordered from Spang, Chalfant & Co., Inc., of Pittsburgh, Pa. Work on the new line was started at once and C. H. Waring, chief engineer of the Kansas City Gas Co., expects to have the job completed by June 1.

LOWER CHICAGO RATES

Lower gas rates have gone into effect in Chicago, the new rate being 90 cents per 1,000 feet, a reduction of 5 cents per 1,000 feet compared with the old rates. Gas company officials said that 790,000 consumers would be saved a total of $2,135,000 annually through the lower rate which was ordered voluntarily by the company with the consent of the Illinois Commerce Commission. The new gas plant in Crawford Avenue, largest in the world, is said to have made the reduction possible.

CITY PLANNING AND NATURAL GAS LINES

City planners and natural gas officials who will meet in Dallas simultaneously May 7, will be of great mutual benefit, said O. H. Koch, vice chairman of the Dallas City Plan Commission and chairman of the program committee for the National City Plan Convention.

"It is fortunate," Mr. Koch said, "that these two great national conventions will meet at the same time. Each group can get a great many ideas and much benefit from the other, since the fundamental purpose of each is the same, to serve adequately their cities and states."

Mr. Koch pointed out that when the engineers made a survey of Dallas, one of the outstanding advantages they mentioned was the abundant supply of natural gas in the city. "Thus providing fuel," he explained, "to a city without coal deposits and without much wood supply, and providing a fuel that is adequate, relatively low in price and of such a nature that the city is always clean and beautiful, unlike the dirty and depressed appearance of some cities whose factories burn coal.

"The subject of city planning is of special interest to gas companies since one of the biggest problems of the gas companies is to lay out, properly and efficiently, a distribution system. This work must be planned years ahead of the actual growth of the city. Of course this means that the gas companies must be able to predict the nature and type of expansion which will probably take place, a thing particularly difficult for any one who has not given the subject expert study.

"If the gas company knows the actual locations for streets and right of ways, which the city planners can give them, and the data in regard to the type of development to be expected, many mistakes are avoided and much work can be done ahead that otherwise would have to be held until the company could find the trend of building and development."

TRY TO FLOOD GASSER THROUGH ANOTHER WELL

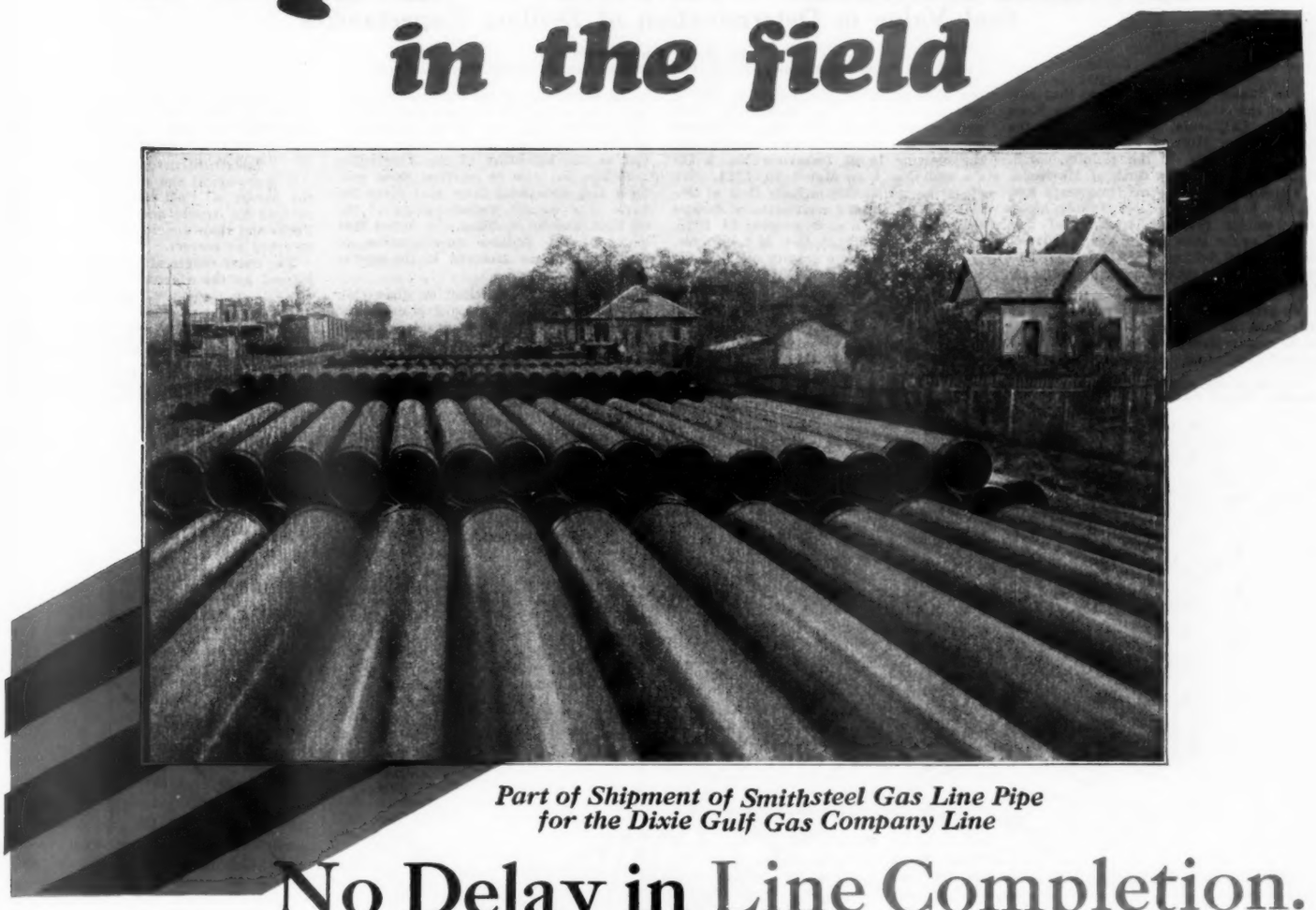
Leslie McKay, deputy chief supervisor of the Texas State Railroad Commission's oil and gas division, is renewing efforts to extinguish the blazing gas well, Rachel No. 7, White Point Field, San Patricio County. The blaze has been extinguished several times, but each time it ignites again. Gas well experts are unable to account for the situation.

Chief Supervisor R. D. Parker of the oil and gas division, said efforts are being made to put out the blaze by forcing water down another well 300 feet away in the hope that it will penetrate the lower reaches of the burning well through the sands.

KNORPP RIGHT OF WAY

The first purchase of right-of-way for the Kansas City-Texas Gas Co.'s pipe line was announced by John L. Knorpp, president. The Kansas City-Texas will supply the Industrial Gas Companies of the several cities where the Knorpp interests plan to supply gas from the Amarillo fields. A 30-mile section near Woodward, Okla., was purchased. The width varies from 16 to 20 feet. The wider section is needed in rough regions, as room for operation of pipe line machinery must be included. The surveying crew has operated from Alva, Okla., to the Oklahoma-Texas line, a distance of slightly more than 100 miles.

"Pipe on Hand" in the field



Part of Shipment of Smithsteel Gas Line Pipe for the Dixie Gulf Gas Company Line

No Delay in Line Completion. Production Sufficient for Largest Construction Programs. Capacity 16" to 24" pipe 6 to 8 miles per day

SMITHSTEEL GAS LINE PIPE

in Quantities as Needed.

A. O. SMITH CORPORATION *Oil & Gas Field Products Division*

General Offices, Milwaukee, Wisconsin *District Offices at* New York, Pittsburgh, Tulsa, Houston, Los Angeles

Geological Features of Sunset Field

Basic Theories of Sedimentation Declared to Be of Practical Value in Determination of Drilling Expectancies

By H. R. Farnsworth*
Associate Petroleum Engineer, Pacific Coast District, United States Geological Survey.

The Sunset oil field embraces that portion of the oil-producing district in Kern County, California, situated along the south edge of Midway Valley and in the Temblor foothills, in the vicinity north, east and south of the town of Maricopa.

Although the heavy oil from seeps and shallow holes found in old Sunset, along the Temblor foothills, was mined and utilized as far back as the years 1891-94, the first real drilling activity in the Sunset Field proper occurred during the years 1900-1.

However, notwithstanding the age of this field, its development has continued to be one replete with sensational "surprises," including, among many others, the blowing in of the Lakeview No. 1 Oil Co. well No. 1 on March 14, 1910, with an estimated daily flow of 65,000 bbls. of 20 degrees Baume gravity oil, the blowing in of Lakeview No. 2 Oil Co. well No. 1 on March 10, 1914, with an estimated maximum daily flow of 50,000 bbls. of oil, the completion of Obispo Oil Co. well No. 6 on September 24, 1925, with a sustained daily flow of 1,400 bbls. of 19 degrees Baume gravity oil, and the completion of Standard Oil Co. well No. 140 in June, 1927, with a daily flow of 1,460 bbls. of 21 degrees Baume gravity oil.

The uncertainties which have characterized the drilling in this area up to the present time have been due mainly to the lack of a proper application of the existing knowledge of the fundamental geologic and structural features that control the location of the oil. It is the purpose of this article not only to report in detail on the extension of the Thirty-five anticline, but also to reaffirm those geologic and structural facts that form the basis of a correct understanding of the oil field, and by so doing it is hoped that many of the drilling uncertainties of the past may be removed in the operations of the future.

In order that the following discussion may serve its full purpose it is necessary that a common basis of consideration be established as between the reader and the writer, and it is therefore deemed advisable first to review briefly the effect of the more important geologic and structural features that determine the location of the oil field, and those less important structural features that govern the accumulation and location of the oil and gas.

Larger Structural Features

The geological and structural history of the Sunset oil field has been adequately covered by Arnold and Johnson[1], and by Pack[2] and their conclusions are generally accepted as correct.

The coast ranges of California are considered by the aforesaid writers and by

(Continued on Page 88)

*Published with the approval of the acting director, United States Geological Survey.

[1]Arnold, Ralph, and Johnson, H. R. "Report on the McKittrick-Sunset Oil Region," United States Geological Survey Bulletin No. 406, 1910.)

[2]Pack, R. W., "The Sunset-Midway Oil Field," United States Geological Survey Professional Paper No. 116, Part 1 (1920.)

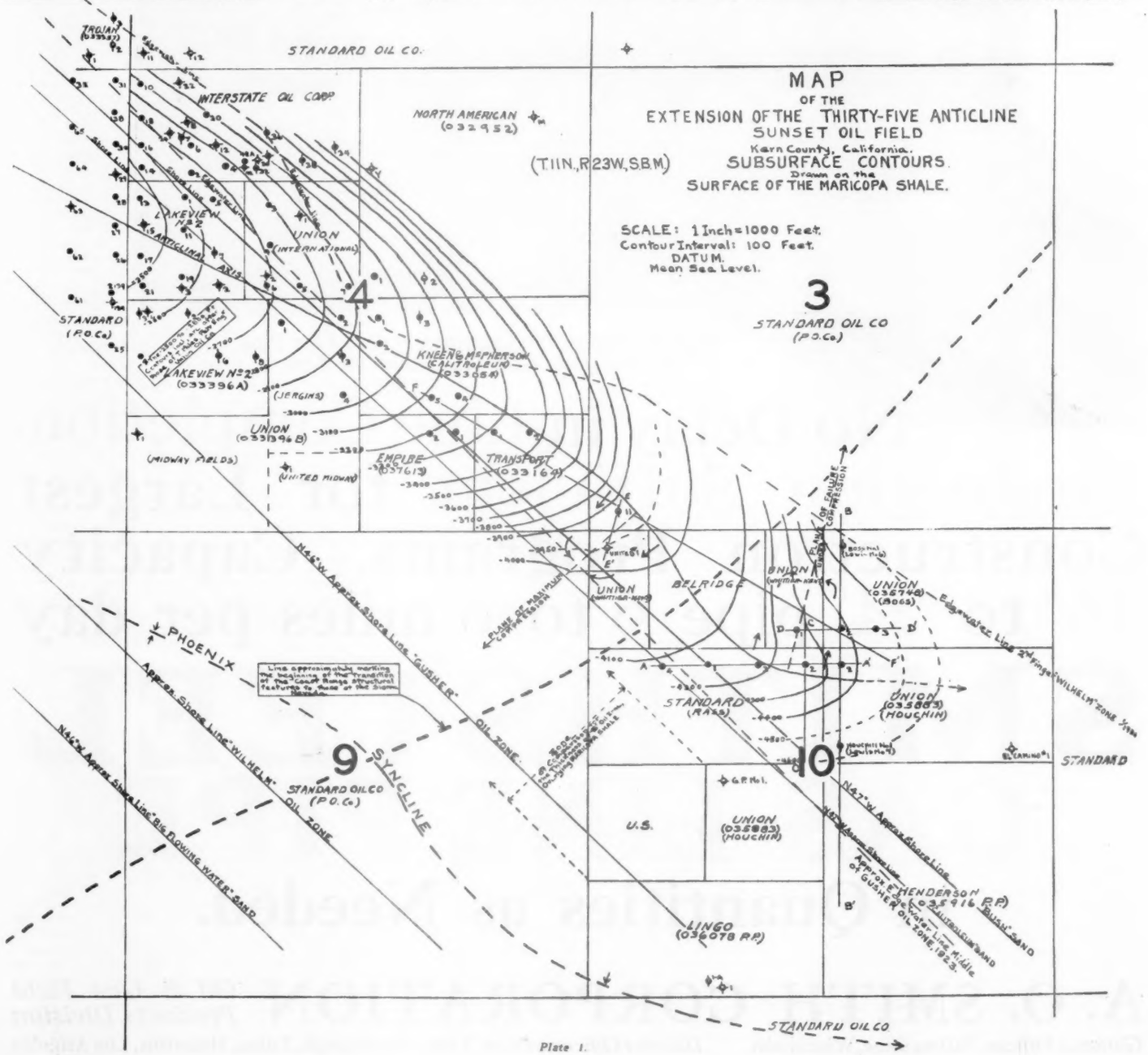


Plate I.

ROCKY MOUNTAIN AREA

(Continued from Page 51)

the end desired. The Cody Petroleum Co.'s No. 2 Klindt, NE NE Section 7-51-100, is drilling below 3,000 feet.

An interesting development of the week was the discovery of light oil in J. W. Bales and others' No. 1 Beck, NE SE SW Section 20-52-100, on the north edge of the Oregon Basin Dome, in a sand of the Frontier series at 1,010 feet. The location is within the geologic structure and on the north edge of an old lake bed, but 3 miles north of the Ohio's discovery well and 1½ miles north of the Producers & Refiners' test, one of the nearest drilling wells. Dispatches from Cody say that the oil is 45 degrees gravity. Whether the discovery is commercial cannot be determined until the hole is is drilled deeper. The Frontier outcrops at the southern end of the structure, but is said to have shown some oil in some of the wells drilling near the top.

Oregon Basin Dome

Charles E. Orchard's No. 1 Rue, SW cor. SW Section 28-51-100, Oregon Basin Dome, topped the Embar at approximately 3,531 feet and commenced showing oil. The 6¼-inch casing was cemented at 3,511 feet following a bad fishing job, and it will not be necessary to delay drilling in. Tankage had been ordered some time ago and is on the way. The Embar is more than 200 feet thick, so it probably will take two weeks to secure a lineup on what the well will do. The location is on the northeast flank of the south dome, and 1½ miles northeast of the Ohio Oil Co.'s No. 1 Baston, on the NE cor. Section 6-50-100, the discovery well on the south dome, and 4 miles south of the Ohio's No 1 Sonners, Section 8-51-100, the discovery well on the north dome.

The location is lower on the structure than the Baston well, according to available maps, and proves up considerable territory and goes a long way towards confirming the growing opinion that Oregon Basin is going to be a big operation. The worst handicap is the quality of the oil. If it was of a light grade, the field would now be covered with derricks.

The Ferdig-Wyoming Oil Co.'s No. 1 Hough, SE cor. SE Section 19-51-100, midway between the two structures, which topped the Embar at 3,686 feet, is drilling in at 3,750 feet with the oil almost to the top of the hole. So far there is not enough gas to make it flow. This well practically proves the saddle between the two domes and makes it look as if 5 miles of territory will be productive with the limits not yet found on the north or south Continental Oil Co.'s No. 1-A State, NW cor. Section 16-51-100, is drilling at 2,127 feet. Lenco Petroleum Co.'s No. 1 Rousseau, NE NW Section 33-51-100, is drilling at 3,050 feet and gas encountered at 2,905 feet has increased to about 8,000,000 feet with considerable oil in the hole. This well is not yet in the Embar and the gas and oil will be cased off to continue down to the objective horizon. Same company's No. 1 Pulley, Section 13-51-100, is standing with casing cemented at 1,025 feet. Same company's No. 1 Lyle, SE cor. Section 24-51-101, is changing over to rotary at 1,065 feet. Producers & Refiners Corp.'s No. 1 Frisby, SW NE Section 32-52-100, is drilling at 1,970 feet. Wisconsin Holding Co.'s No. 1 Rausch, NW cor. NW Section 9-51-100, is underreaming to bottom of hole at 2,100 feet. Ross & Richards' No. 1, Section 28-52-101, is drilling at 240 feet. Three-Holding Association's No. 1 Downing, Section 35-51-100, is drilling below 400 feet. Ostland Development Co.'s No. 1 Shaw, NE cor. NW Section 18-51-100, is drilling at 2,000 feet. The Ohio Oil Co.'s No. 3 Sonners, Account 1, NW NE NW Section 8-51-100, is drilling out cement at 2,351 feet, at which depth the top of the Embar was encountered. Same company's No. 1 Baston, NE cor. NE Section 6-50-100, is drilling in the Embar at 3,607 feet, making 180 feet so far penetrated. The hole is standing full of oil. The Ohio's No. 2 Wilson, NW cor. NW Section 4-50-100, is drilling at 2,967 feet.

Park County operations other than Oregon Basin include the following: The Ohio Oil Co.'s No 2 Buffalo, Account 12, SE cor. NE Section 3-47-100, Buffalo Basin, has spudded in and is drilling at 150 feet. Same company's No. 1 Pulley, Section 27-53-101, Shoshone anticline, is drilling at 3,080 feet. Honolulu Oil Co.'s No. 1, CNL N half Section 29-48-103, Fourbear Dome, drilling at 3,200 feet in the top of the Tensleep with 500 feet of black oil in the hole.

In Big Horn County, the Producers & Refiners' No. 3 Government, Section 24-56-98, joint with the Kinney-Coastal Oil Co., on the Garland Dome, is drilling at 1,427 feet in brown shale, and the Utah Southern Oil Co.'s No. 3 Government, Section 29-56-97, is bottomed at 2,780 feet in the red beds. The last-named is underreaming at 2,750 feet to lower 6⅝-inch to bottom where it will be cemented.

In Fremont County, the Producers & Refiners' No. 1, Section 34-34-92, Muskrat Dome, is rigging up to run the 8¼-inch casing. Total depth, 3,025 feet. The Texas Production Co.'s No. 1, Section 1-33-95, Alkali Butte Dome, is drilling at 2,875 feet.

Unusual Ceremony

A solemn and unusual ceremony was performed the past week by Dan Harrison, a scout for the Texas Production Co., when he journeyed to Independence Rock, a noted natural monument that figured in pioneer history, and scattered to the winds from its top the ashes of J W. McKim, veteran oil man and mining engineer, who died on New Year's eve. Mr. McKim's will provided for the cremation of his body at Denver and disposal of the ashes in the manner named. Independence Rock is located on the Sweetwater River, in Carbon County, near Crock's Gap, on the road from Casper to Rawlins. It is an immense rock jutting far up into the air, that attracts attention at a distance of many miles on account of its size and shape, like that of the torso of a giant beast. One of the old pioneer trails passed at its base and in its shadows many early explorers made their camp. Mr. McKim was for a time a mining engineer at Salt Lake City, but in later years he was in the oil business at Casper.

A deep test to the Lakota sand in the Brenning Basin near Douglas in Converse County, is planned by the Wind River Oil & Gas Co., of Greensburg, Ind. That company has entered into a contract with A A. Tylee for the development of a block of leases and the completion of a test on S half Section 8-32-73, started by Mr. Tylee last summer. Brenning Basin has a number of shallow wells which have produced small quantities of oil at intervals for many years, and extensive prospecting has been done in that area, but the source of the oil found at a depth of a few hundred feet has never been discovered.

The Midwest Exploration Co. has made a location on the SW SE SW Section 35-22-115, on the Waterfall structure, near Opal, on the Oregon Short Line, in Lincoln County, and expects to commence drilling as soon as weather conditions are favorable. The well will be drilled for the account of the Utah Oil Refining Co. Reports that the company is preparing to drill on the Round Mountain structure in the same area are not confirmed at the Denver offices.

New Mexico

The best completion in southeastern New Mexico for some time was Getty Oil, Inc.'s No. 2 Dooley, in the NW NW NW Section 24-20s-29e, in the Twin Mounds district, 10 miles southeast of the Artesia Pool in Eddy County. It topped the sand at 1,377 feet and was drilled to 1,378 feet, 1 foot into the sand, at which depth it was completed. It made 430 bbls. on the swab the first 24 hours and 309 bbls. in the second 24 hours. The well commenced spudding about March 1. It topped the salt at 350 feet and bottomed the salt at 985 feet. At 1,050-77 feet it had a good show of gas. This makes three producing wells completed in that area by the Getty interests, opening a new pool which appears to have very promising possibilities The first well drilled was No. 1 Rawson, in the SE cor. Section 14-20-29. It was abandoned at 1,670 feet on account of a bad hole and plugged back to 1,390 feet. It was shot at 1,372 feet, but no production resulted, water rising 100 feet in the hole with a show of oil. The rig was then moved 500 feet to the south where No. 1 Hinkle, NE cor. Section 23-20-29, was drilled This well cut the salt at 350-1,010 feet and found the pay at 1,365-68 feet, swabbing 234 bbls. the first 24 hours; 146 bbls. the second 24 hours and 141 bbls. the third period. After being tubed it flowed 69 bbls. initial and 77 bbls. the second 24 hours after which it was shut in. The next well drilled was No. 1 Nicholas, NW NW Section 25-20-29, a little more than a mile to the south of the No. 1 Hinkle It was completed at 1,384 feet with an initial production of 70 bbls. It cut the salt at 370-970 feet and had a show of gas at 1,030 feet. The next well drilled was the last completion, No. 2 Dooley, located approximately one-eighth of a mile to the southeast of the No. 1 Hinkle. It is not only the best well of the group, but is about 7 feet higher structurally.

The Eureka Oil Co. is reported to have made a location in Section 6-21-26, west of the Pecos River and northwest of Carlsbad, in Eddy County. Rig cellar has been completed and materials are being moved to location. Ross & Grimm's No. 1 Daugherty, NW cor. SE Section 3-17-27, is reported a completion with an initial production of 10 bbls. It was drilled to 2,014 feet and shot with 80 quarts at 1,945-2,000 feet. Gates, Holman & Rehn's No. 1 Murdock, SW cor. NE Section 7-21-28, is drilling at 1,650 feet. Hammond Oil Co 's No. 1 Miller, SE SW Section 15-16-25, is reported drilling again at 1,800 feet after a brief shut down. Marland Oil Co.'s No. 1 Gardner, NE cor. SW Section 34-23-31, is spudding at 110 feet. Snowden & McSweeney's No. 1 Lawrence, NW cor. Section 35-20-29, topped the salt at 505 feet and is driling in salt at 650 feet. R. D. Compton's No. 1 Vandergriff, NE SE Section 8-18-27, is delayed by parted casing.

The Standard Oil Co. of California has acquired a minority undivided interest in part of the holdings of the Marland Oil Co. of Colorado in Lea and Eddy Counties. It is understood that the preliminary contracts have been signed, but no information has been given out as to the terms of the deal or the exten of the interest purchased. However, the deal is said to involve an interest in more than 100,000 acres The Marland company, which already has five wells under way, will continue the exploration work on the holdings involved.

Marland Oil Co.'s No. 1 Eaves, SW NE Section 19-26-37, Lea County, set the 10-inch at 2,840 feet and is waiting for cement to set. Same company's No. 1 Seideman, SW cor. Section 4-25-36, is running the 12-inch at 680 feet, and its No. 1 Roberts, SW cor. Section 20-23-35, is repairing bull wheel at 615 feet. It cut a sand at 560 feet making 10 bbls. of water per hour. Same company's No. 1 Sholes, NE cor. SE Section 24-25-36, is digging slush pit. Curtis Drilling Co.'s No. 1 State, Section 22-18-34, is moving in materials. The Empire Gas & Fuel Co 's No. 1 State, NW cor. Section 8-21-35, is rigging up. The Midwest Refining Co.'s No. 1 State, Section 9-19-38, is drilling at 2,887 feet in lime shell showing gas, having recovered tools which lodged when the gas was encountered at 2,880 feet. The Cecil Bordages test in Section 27-19-38, is still held up at 3,110 feet where tools were blown up the hole when it ran into gas. It is now sidetracking.

The seven operations in Chaves County are all reported shut down. In Curry County, three wells are reported idle, and Steinberger and others' No. 1, NE Section 21-3n-35, is reported trying to pull pipe.

Building Gas Line

Construction of the Pecos Valley Gas Co.'s line from the Artesia Pool into Artesia is going ahead. The main line runs from the gas well on the Vandadriff permit in the NW NW SE, Section 5-17-28. This well is reported to have increased its capacity to about 3,000,000 feet a day since being opened up.

In the northwestern part of the State, the Continental Oil Co.'s No. 17, Santa Fe Corp. lease, Section 2-29-19, Rattlesnake Dome, in San Juan County, is drilling at 4,730 feet It is the only Pennsylvanian test drilling in that area and the results probably will have considerable effect on future wildcat operations. The Union Oil & Mining Co.'s No. 2 Pine, SE SW, Section 8-29-9, in the Blanco district, is plugging back from a total depth of 4,030 feet to shoot and test a showing at 2,950 feet. The Kutz Canon Oil & Gas Co.'s No. 1 Day, SW SW Section 29-28-10, is drilling at 200 feet. The San Juan Petroleum Co.'s No. 1 Umbenhour, SE SW Section 9-29-13, near Farmington, is bottomed at 2,920 feet in brown shale, with the casing at 2,906 feet. It is being lowered to 2,918 feet where it will be cemented to make a water shutoff. The objective of this test is Point Lookout sand in the base of the Mancos shale. The Co-Ne-Mo Oil Co.'s No. 1 Viles, SE SE Section 28-29-11, in the Kutz Canon district, is drilling at 500 feet.

The San Juan Basin Oil Exchange and Information Bureau, with offices at Farmington and Aztec, is issuing a weekly summary of drilling operations in northeastern New Mexico, that is proving to be of considerable value and interest. There are five proven fields in that territory, these being the Hogback, Rattlesnake, Table Mesa and Bloomfield Domes in San Juan County, and the Hospah Dome in McKinley County. The major operators have production on four out of the five structures, but with the exception of the Continental's deep test on Rattlesnake, they are not drilling at this time. The result is that the territory is not regularly scouted by the major companies. On the other hand, there are numerous small companies carrying on work whose stockholders have had but meager facilities for obtaining information.

Utah

While Utah is scheduled to have some new tests this spring, it will be several weeks before these get under way. In the meantime there is little to report outside of routine operations. The Crystal Carbon Co. appears to have a good gas well in its No. 6, on Section 14-20-21, on the Cisco fold in Grand County. It was drilled to the cap rock at 2,260 feet in 13 working days. The casing is being set at that depth and it probably will be drilled in next week. This is the first of six wells to be drilled this year to increase its supply of gas for the carbon black plant it operates in the field.

The Utah Southern Oil Co.'s test on the Salt Valley Dome near Thompson, in Grand County, is expected to get under way soon. It will be a joint test with the Moab Consolidated Oil Co. in which officials of the Midwest Refining Co. have interests. A tentative location was made some time ago in the NW cor SW Section 18-23-21. A survey is now being made to determine upon which permit this location was made. A road to location is being built and material has commenced to move. The Utah Southern Oil Co.'s No. 1-A John L. Shaffer, NE Section 36-26-20, Cane Creek Dome, is drilling at 755 feet in lime. The formation is very hard and progress is slow. The Embar Oil Co.'s No 1 Big Six, Section 34-25-21, on the Moab Dome in Grand County, which was reported last week as being abandoned, made a very interesting record. It was drilled to a total depth of 5,345 feet with a No. 28 Star rig. John A. Tannehill was the driller in charge from 2,000 feet to the bottom. The hole was in good shape when drilling stopped and could probably have been carried deeper had it been considered advisable. The well probably is the deepest stratigraphically drilled in Utah. It failed to encounter the thick salt beds found on the Colorado River structures.

Western Venture Corp.'s No. 1 Krumvieda, Section 6-5s-21e, on the Vernal monocline in Uinta County, is bottomed

at 753 feet in a fine conglomerate. It topped a 3-foot water sand at 709 feet. Casing has been set and drilling is expected to be resumed this week with the next sand due at around 884 feet. Same company's No. 1 Spahr, Section 8-5-21, on the Dog Valley structure, is drilling at 105 feet. Continental Oil Co.'s No 1 Boundary Butte, Section 23-43-22, San Juan County, is drilling at 3,685 feet. Operations have been resumed on the Texas Production Co.'s No. 1 Shipley, Section 5-27-14, Sweetwater Dome, in Wayne County, following the taking over of the contract by the company. It is bottomed at 2,885 feet with the tools at the bottom. The 10-inch casing, of which 2,745 feet had been run, is being pulled after which the hole will be underreamed to carry that string down to the top of the tools. The Midwest Exploration Co.'s No. 1 Early, Section 13-4s-6w, Duchesne County, is drilling at 3,455 feet in gray shale Same company's No. 3 Ashley Creek, Section 23-5-22, Uinta County, which had 20,000 bbls. of water per day at 2,720 feet, has been plugged back to 2,423 feet, just above where the water commenced showing. The 8¼-inch casing has been pulled and a bradenhead will be installed to save the gas.

The Mid-American Oil Co.'s No. 1, Section 17-43-15, Bloomington Dome, Washington County, is drilling below 1,320 feet after being delayed by a fishing job. Showings of oil and gas have been reported for the last 100 feet.

Colorado

Another structure was proven in Colorado the past week when the Continental Oil Co.'s No. 1 Hoye, NE SE NE Section 34-9n-78, on the South McCallum Dome, in Jackson County, 18 miles south of the Wyoming boundary, encountered a heavy flow of gas at 4,875 feet. The pressure blew the tools up the hole 2,000 feet where they lodged. The vacuum created by the tools in going up the casing pulled up mud and rock which formed a bridge and completely shut off the flow. The tools have been recovered and the bridge is now being drilled out. There was no opportunity to estimate the quantity of gas or to determine whether it was accompanied by oil from the gas horizon, but it was evident that it blew in with enormous pressure.

The well is located about 6 miles southeast of No. 1 Sherman, the discovery well on the North McCallum Dome, which blew in in December, 1926, at 5,110 feet making as high as 30,000,000 feet of carbon dioxide gas and between 500 and 600 bbls. of 54 gravity oil at its best. The Hoye well is supposed to have found the gas in the Muddy sand, the first to the Dakota series, the same horizon producing on the north dome The gas also is composed largely of carbon dioxide, similar to that found in the north well. The two structures, according to the surface geology, are separated by a fault. The fact that the gas on the south dome is apparently of the same quality as found to the north will result in speculation as to whether the two structures comprise separate domes on the anticlinal fold, or are one and the same structure. If the latter is proved by drilling to be the actual condition, it will mean that the Continental has a big structure upon which to operate. The carbon dioxide gas presents a difficult producing problem, but it is believed that if the main Dakota, or second sand, can be drilled, that this will not contain the gas that freezes the oil while expanding. The Hoye well encountered the Frontier at 4,136-4,205 feet and had considerable oil in the sand. The fact that there was oil in the hole makes it impossible to determine just at this stage of operations whether there is oil in the gas sand.

Efforts to reach the lower horizons will be made not only in this well, but in No. 1 Peterson, SW SW Section 1-9-79, just to the north of the discovery on the north dome, which is blowing around 50,000,000 feet of gas per day from the Muddy sand at 5,115 feet. The Continental Oil Co. controls all the acreage on the two structures, all of which is Government land.

In 1922, the Carter Oil Co. had a permit on the south structure and drilled a well on Section 27-9-78, but abandoned it at 3,963 feet. It was reported at the time that the Carter well had tested the Dakota, but the Hoye well disproves this, and it is apparent that the former test did not reach the objective. It is understood that the Carter hole had been so reduced that it could not have gone much deeper. The Continental has another well, its No. 1 Pollock, SE cor Section 2-9-79, drilling on the north dome. This well appears to be running about 125 feet higher than the discovery. At present it is held up by a fishing job at 4,890 feet.

Boulder County Failure

The Left Hand Oil Co. has given up hopes of saving its No 1 Prechtl, C NW NW Section 34-3n-70, on the Left Hand structure, in Boulder County, which nine months ago gave encouraging indications of opening up a new pool. Four successive efforts to make a water shutoff by cementing the pipe failed on account of the gas pressure and other difficulties, and it has been decided to abandon the well and start another. It is being plugged at a total depth of 2,056 feet. The well topped a 3-foot water sand at 1,840 feet. It was drilled to the top of the Muddy at 1,940 feet where it encountered a show of oil. Then the efforts to shut off the water commenced. Finally, the horizon was drilled through and the formation was found to be 83 feet thick and saturated. There was 33 feet of true sand and the remainder was sandy shale. Two locations have been spotted for another test, but it has not been decided which will be drilled. One location is in the SE cor. Section 33-3n-70, and the other in Section 4-2n-70. The company is planning to start in a 20-inch hole with standard tools so that a test to the Sundance may be made if necessary The location is north of the old Boulder Field and southwest of the Fort Collins district. The shallow depth to the Dakota makes the location especially favorable for a test to the Sundance which has never been drilled on any of the front range structures in northern Colorado.

The Repollo (Sinclair) Oil Co.'s No. 1 Deins, Section 33-1n-70, Parallel Dome, Boulder County, recently reported an abandonment in the Muddy sand, has been sold to Leslie Steel of Boulder, who will produce it from the Hygiene at 3,400 feet, to which horizon it was plugged back. It made 3 bbls a day when tested.

Florence District

The Florence district in Fremont County continues to increase in activity. Pipe line runs for the week ended April 2 averaged 1,305 bbls. daily, including runs from the west extension. This is a high record for the past 25 years. Donnelly Brothers' No. 1 Alger, SE SE Section 3-19-70, commenced spudding March 31. The Continental Oil Co.'s No. 1 Bromwell, NW SW Section 3-19-70, is another new well that has commenced spudding. Some company's No. 1 Adamic, NW NW Section 12-19-70, is drilling at 1,900 feet, and its No 1 Kissinger & Wright, NE NW Section 4-19-70, has been abandoned at 3,460 feet. It had a show of oil at 1,640 feet. This well was the farthest west in the Canon City extension and probably marks the west limits of the new pool. The Continental's No. 1 Andy Smith, SW SW Section 3-19-70, is drilling at 2,525 feet, and its No. 1 Machetti, SW NW Section 2-19-70, is drilling at 1,545 feet. Same company's No. 3 David Hall, NW SE Section 35-18-70, is drilling at 155 feet, and No. 1 Dalfior, SE NE, Section 3-19-70, is drilling at 420 feet. No. 2 Dunn, NW SE Section 35-18-70, is drilling at 285 feet. The Texas Production Co.'s No. 2 Wilson, SE SE NW Section 35-18-70, is fishing at 2,315 feet, and its No. 1 Castagna, NW NW SE, Section 3-19-70, is spudding. Some company's No. 1 Ott, NW SW SE Section 3-19-70, is building rig, and its No. 1 Dunlap, SW NW SE Section 3-19-70, is rigging up W. F. McCormick's No. 1 York, NW NW Section 3-19-70, is drilling at 4,200 feet. This is intended as a sand test. Canon City Oil Co.'s No. 1 D.&R.G., SE SW SE, Section 35-18-70, is drilling at 1,100 feet. Phantom Petroleum Corp.'s No. 1, NW SE NE, Section 34-19-70, is drilling at 1,050 feet, and its No. 1 Green, NW NE Section 10-18-70, is drilling at 1,500 feet. Pleasant Oil & Leasing Co.'s No. 1 Ketchum, NE SE Section 35-18-70, is drilling at 650 feet.

Moffat County

In Moffat County the drilling at present is confined to the Iles Dome. Shaffer Oil & Refining Co's No. 205 Yarg, NW NW Section 26-4n-92, is drilling at 3,630 feet in a dry hole and feeling for the Morrison sand. This well is down on the structure and should it come in as a producer it will prove up close to 1,000 acres. The Texas Production Co.'s No. 17 State, NW SE Section 15-4-92, joint with the Kinney-Coastal Oil Co., is stringing up new drilling line. Total depth is 3,242 feet. Same company's No. 6 Parkinson, NW NW Section 23-4-92, is underreaming at 2,802 feet to lower the 10-inch casing. Total depth is 2,812 feet. Its No. 13 Parkinson, NE SW Section 22-4-92, is bottomed at 2 945 feet and underreaming the 8¼-inch at 2,935 feet. The Alliance Oil Co.'s No. 1 Milliken, SW cor. Section 14-4-92, is drilling at 2,220 feet. The Midwest Refining Co.'s No 8-SD-2 Parkinson, NW Section 23-4-92, is drilling at 1,820 feet in dark gray shale. Same company's No. 7-SD Parkinson, NW NW Section 23-4-92, is lowering pipe to 2,800 feet. Its No. 33-SD Parkinson, SW SE Section 22-4-92, is drilling at 1,720 feet in brown shale.

In Routt County, the Texas Production Co.'s No 1 Henry Dennis, NE cor. Section 18-6n-86, is drilling at 2 975 feet. Same company's No. 4 Belle Dennis, NE SE Section 7-6-86, the deep test, is rigging up. The Great Western Oil Co.'s No. 1 State, SE NW Section 17-6-86, has not yet resumed drilling after shutting down last week at 2,200 feet upon encountering some oil and gas. Morrison & Johnson's No. 1 Hitchins, SW cor. SE Section 31-7n-85, Trull Creek Dome, is resuming at 2,640 feet after being shut down for the winter

In Las Animas County, the Phillips Petroleum Co.'s No. 1 Haskins, Section 23-29s-56, Red Rocks structure, joint with the Reiter-Foster Oil Co., is drilling at 1,477 feet in a very hard black formation that is something new in that area. The drill is making only about 6 inches per day. Mountain States Gasoline Corp.'s No. 5 Sandoval, SE NE Section 4-34-62, San Francisco Creek structure, is drilling below 450 feet.

Yuma County Deep Test

Yuma County, on the eastern boundary of the State, is to have a deep test this spring. The location has not yet been released, but it will be on the Beecher Island structure, 13 miles south of Wray, near Beecher Island, a historical landmark. Mentor Etnyre and associates will do the drilling. Rig used in drilling the Repollo Oil Co.'s well near Boulder has been purchased and is being moved to location. In the meantime a small rig was used to spud in and hold leases. It is to be a Pennsylvanian test and will go 5,000 feet if necessary. Some testing has been done in this county in the past, but none went below the Dakota.

The East Long Beach Oil Co.'s No 1 Aspaas, SW cor. NW Section 10-34-11, on the Red Mesa Terrace in La Plata County, is reported to have been abandoned. The details are lacking, one report saying that it was abandoned at 3,500 feet, another that it was drilling below 3,460 feet at last reports, and another that drilling stopped at 3,212 feet after finding the Dakota barren. The operators are said to have left the district.

Suit has been filed in the Supreme Court of the District of Columbia asking for a mandamus to issue directing the Secretary of the Interior to issue patent to Emil Krushnic on a certain tract of oil shale land in western Colorado. This is a test case in court on the decision of Secretary Work rendered on February 8, 1928, on the application of Krushnic for a patent, which the Secretary denied in a lengthy opinion. The Secretary held that because assessment work on the claim was not done in 1920, that the land became subject to the provisions of the mineral leasing act of February 25, 1920, and reverted to the Government. The matter at issue is a question of law and the results will affect many thousands of acres of oil shale land where locations were made under the old placer mining laws prior to the enactment of the leasing bill.

Montana

Definite statements by the officials of the Hope Engineering & Supply Co. at Great Falls place the completion of the gas line from Sunburst to Great Falls as May 1, and on that date the gas will be turned into the line and will be sent into the distributing mains in Great Falls. The present distribution system of the Great Falls Gas Co., used for manufactured gas, will be used to place the natural gas in the homes of that city. Now that the gas is definitely assured, a further controversy has arisen over the rate proposed with a minimum of $1.50. The citizens ask a rate like the Billings rate, with a minimum of 62½ cents. The new pipe line has about 24 miles of pipe to lay and about 25 miles of gathering lines in the field to complete before it will be ready for the gas pressure. A force of 275 men is now laying the last of the trunk line and a second force in Sunburst Field is rapidly connecting up the wells there.

Up in the Sweetgrass Hills, north of Sunburst, the Western Natural Gas Co.'s No. 1 Townsend in Section 21-37-4, found a pay with a flow of gas in it at 1,675 ft. The well is good for 6,000,000 feet and it is expected this well will be used to furnish gas to Great Falls along with others in the Sunburst Field.

In the new Pondera Field, the W. M. Fulton well in Section 16-27-4 has been pumping for six days and the average is 7 bbls. per hour. The gravity is 28 degrees and the oil is found in a sand at 2,010 feet, just under the Ellis lime. The sand is also a mixture of lime and sand. Four other wells are starting or drilling on the Pondera structure.

In the new Bannatyne Field, the Genou Oil & Gas Co's No. 3 was shot and put to pumping. It is in Section 5-25-1 and is making an average of 30 bbls. daily. This well is in a new sand that has been named the Emrick, found at 1,422 feet.

Sunburst Field

In the Sunburst Field, the activity around the Baker wells is greater than at any other point. The No. 3 Baker was shut in for a while and when opened it made some gas, but the water flow seemed to have stopped. The operators are still confident this well will come into production after while. No. 1 Baker is making about 800 bbls. daily.

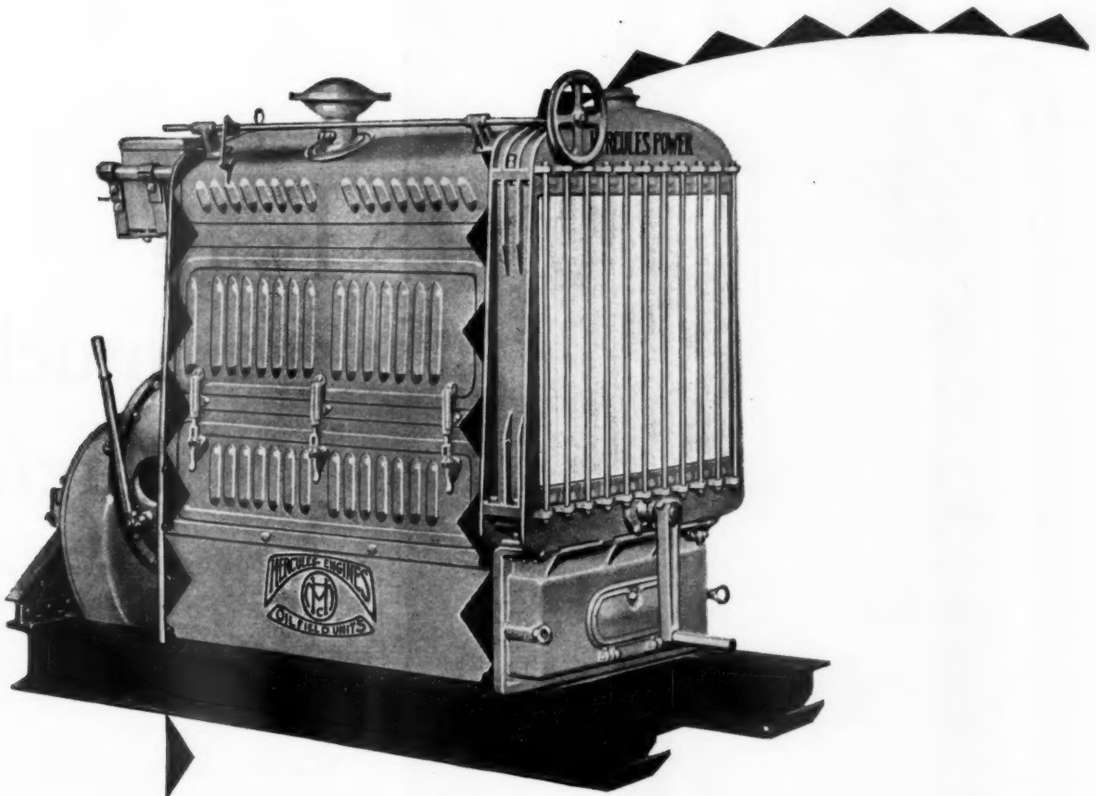
The Barger Sunburst well in Section 9-34-1 has been abandoned as a dry hole. A showing was shot with 100 quarts but failed to respond with commercial production and the hole was drilled 70 feet into the Madison lime without results.

The No. 1 Adams on the McSweeney ranch, drilled by the Adams interests and located in Section 33-33-2, about 6 miles north of Shelby, reported a gasser last week, has a measured production of 11,000,000 feet daily. This well will be turned into the line to Great Falls and Shelby.

At Shelby the first unit of the new electric power plant built and operated by the Great Northern Utilities Co., was started in regular operation the past week The transmission lines are expected to be ready within a week or two to carry power to other points. This electrical energy is generated through the use of gas from the Sunburst Field and the plant is expected to be enlarged to take care of a large area in northern Montana.

ROCKY MOUNTAIN PRODUCTION
Runs From the Field, Week Ending April 7
Wyoming

Salt Creek	37,890
Big Muddy	2,630
Grass Creek	2,510
Elk Basin	1,060
Greybull	20
Rock River	2,660
Lance Creek	720
LaBarge	850
Poison Spider	140
Hamilton	1,220
Oregon Basin	500
Osage	390
Lander	670
Ferris	60



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It means enduring power economy.

It assures a minimum of maintenance.

It means most satisfactory power equipment under all working conditions.

Look for Hercules Power. Ask for it. There is such a variety of sizes in both the four and the six that a Hercules Engine can be had in a size for almost any work.

HERCULES MOTORS CORPORATION
CANTON, OHIO, U. S. A.

Hercules Southern Representatives:

The Western Supply Co., Tulsa, Okla.; Cromwell, Okla.; Blackwell, Okla.; Covington, Okla.; Pearson, Okla.; Seminole, Okla.; Borger, Texas. Norvell-Wilder Hardware Co., Beaumont, Texas; Fort Worth, Texas; Houston, Texas; Shreveport, La.

Hercules

Firefoam smothers fire under an air-tight blanket—floats on blazing liquids, clings to burning surfaces

Twice as much Firefoam

You have FOAMITE Extinguishers at your loading racks, look boxes, stills, and at many other strategic points. Most of them are probably the 2½-Gallon FOAMITE Extinguishers, and the finest protection you could have for the quantity of *Firefoam* they can produce.

There are places though where you should have a larger extinguisher—such as the 5-Gallon size. Wherever fire can grow rapidly, wherever there is a question about the area over which it might spread, there you need the greater first-aid protection of this larger extinguisher.

In operation the 5-Gallon is exactly like the 2½-Gallon type. It differs only in that its double capacity generates twice as much *Firefoam*—over forty gallons with a range of from thirty to thirty-five feet.

Ask for a DEMONSTRATION of this 5-Gallon FOAMITE Extinguisher. There are representatives at points convenient to all principal oil producing and refining centers. American-LaFrance & Foamite Corporation, Engineers and Manufacturers, Dept. F 4, Elmira, N. Y.

AMERICAN-LA FRANCE & FOAMITE PROTECTION

A Complete Engineering Service for Extinguishing Fires

Byron	40
Lost Soldier	3,850
Simpson Ridge	40
Total Wyoming	55,270
Montana	
Cat Creek	1,820
Lake Basin	160
Kevin-Sunburst	10,000
Total Montana	11,980
Colorado	
Florence	1,269
Moffat	1,587
Fort Collins	3,060
Iles Dome	980
Rangely	100
Tow Creek	405
Boulder	25
Total Colorado	7,426
New Mexico	
Rattlesnake	257
Hogback	510
Cap Rock	185
Table Mesa	234
Artesia	1,147
Total New Mexico	2,333
Total Rocky Mountain	77,009

OKLAHOMA FIELDS

(Continued from Page 44)

Section 6-14-19, is dry and abandoned at 516 feet.

Okmulgee County

X. K. Stout and others' No. 2 V Phillips, CNL NW NW, Section 29-16-14, is spudding. Denton & Marshall have a machine on the location for No. 2 Tiger, SW cor. NW, Section 30-15-13. J. E. Wallace's No 8 D. Colbert, NW cor. NE SE, Section 14-14-14, is drilling at 1,250 feet. A. G. Hazlett and others' No. 3 E. Manuel, NW cor. NE NW, Section 33-13-13, is drilling at 1,400 feet. F. E. Cuseck and others' No. 5-A M. Wiley, SW cor. NW NE, Section 20-13-14, is drilling at 1,100 feet. Shelton Oil Co.'s No. 3 Skelton, CNL SW SE. Section 15-15-13, is spudding. H. Fair's No. 7 Palmer, C S half SE, Section 36-13-11, is spudding.

Harsha & Delaney's No 1-A Harrison, SW cor. NW, Section 35-16-14, made 7,000,000 feet of gas from Dutcher sand at 1,825-36 feet. L. C. Wheeler and others' No. 3 Prince, SW cor. NE NE, Section 36-14-12, has been shut in for 500,000 feet of gas in sand at 1,222-40 feet. Elm Oil Co.'s No. 10 A. Rentie, SE cor. Section 13-14-14, made 10 bbls. from sand at 1,075-36 feet. J. L. Selby's No. 16 A. Flint, NW cor SE NE, Section 26-14-14, is making 2 bbls. from sand at 950-60 feet. C. F. Speary's No. 1-A Rentie, NW cor. SW, Section 7-14-15, is dry and abandoned at 731 feet. Oakland Drilling Co.'s No. 1 Jefferson, NE cor. SW NW, Section 21-14-15, has been completed for 500,000 feet of gas in sand at 1,196-1,210 feet.

Greater Seminole Production

The production of the Greater Seminole Field by companies and leases on Thursday, April 5, 1928, is given below:

Little River Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Nitey	2- 7-6	3	2,655
Amerada-Wilcox:			
Fore	35- 8-6	2	815
Barnsdall:			
Hotulke	22- 7-6	1	36
Blackwell:			
Nitey	35- 8-6	6	2,471
Carter:			
Fish	36- 8-6	6	1,450
Jackson	11- 7-6	1	790
Continental:			
Cosar	36- 8-6	4	2,165
Gypsy:			
Brown	33- 8-6	1	50
Campbell	36- 8-6	2	152
Mungee	1- 7-6	1	40
Pottie	35- 8-6	3	342
Independent:			
Harris	23- 7-6	1	2,633
Davis	2- 7-6	3	1,880
I. T. I. O.:			
Campbell	1- 7-6	1	110
Dungan	35- 8-6	3	2,356
M. A. House	1- 7-6	1	314
W. E. House	1- 7-6	1	65
W. E. House "B"	2- 7-6	4	2,733
Hull	26- 8-6	1	70
Jackson	1- 7-6	3	1,956
McCulla	1- 7-6	3	910
Nitey	2- 7-6	7	1,285
Phoebe "A"	36- 8-6	3	807
Phoebe "B"	36- 8-6	4	349
Reed	1- 7-6	1	44
Sokethecho	1- 7-6	5	935
Magnolia:			
Cruse	2- 7-6	1	440
Dixon	31- 8-7	1	....
Pottie	35- 8-6	4	840
Mid-Continent:			
Smith	5- 7-7	1	30
Wadsworth	36- 8-6	7	995
Pine:			
Hayeche	26- 8-6	1	900
Pine-Phillips:			
Pottie	35- 8-6	2	857
Prair'e:			
Chilcoat	25- 8-6	1	845
Dungan	35- 8-6	2	100
House	2- 7-6	4	1,810
Roxana:			
Smith	1- 7-6	1	7
Shaffer:			
Narcome	36- 8-6	1	100
Sinclair:			
Cosar	36- 8-6	2	1,465
Snowden-McSweeney:			
Tiger	13- 7-6	1	2,870
Superior:			
Sokethecho	1- 7-6	1	16
Texas:			
Coker	1- 7-6	3	600
Tidal:			
House	1- 7-6	3	940
Johnson	1- 7-6	1	50
Total		109	40,279

Maud Pool

Barnsdall:			
Fife	14- 8-5	1	350
I. T. I. O.:			
State	16- 8-5	1	....
Total		2	350

Bowlegs Pool

Amerada:			
Roscoe	15- 8-6	8	1,855
Atlantic:			
Baker	10- 8-6	4	310
Fleet	23- 8-6	4	345
Grayson	13- 8-6	4	564
A. Jones	16- 8-6	3	92
C. Jones	9- 8-6	2	137
Barnsdall:			
McNac	28- 8-6	1	28
Murrow	11- 8-6	4	737
Carter Oil:			
Bowlegs	15- 8-6	4	1,375
Burden	23- 8-6	3	755
Harjoche	14- 8-6	6	555
Hilly	23- 8-6	3	855
Jones	11- 8-6	4	1,295
McGeisey	21- 8-6	1	30
Mecco	9- 8-6	1	....
Melissa	9- 8-6	1	130
Walker	15- 8-6	4	615
Wise	23- 8-6	12	3,250
Empire:			
Lacy	14- 8-6	6	499
Wise	23- 8-6	2	407
Gypsy:			
Bowlegs	22- 8-6	1	182
Bradley	9- 8-6	1	2
Cumsey	10- 8-6	4	1,297
Doser	7- 8-6	1	100
Grayson	13- 8-6	4	955
Harjoche	10- 8-6	2	3,180
Jones	11- 8-6	1	297
Walker	15- 8-6	8	1,710
Wise	23- 8-6	3	260
I. T. I. O.:			
Barnett:	23- 8-6	2	274
Barnett "B"	23- 8-6	1	237
Billington	22- 8-6	5	877
Bowlegs	22- 8-6	10	1,338
Davis	13- 8-6	4	1,409
Fay	13- 8-6	9	2,120
Goforth	15- 8-6	12	1,619
Livingston	15- 8-6	11	3,540
Lizzie	13- 8-6	2	393
Walker	15- 8-6	8	882
Wilmott	15- 8-6	4	329
Work	24- 8-6	1	124
Youngblood	24- 8-6	2	27
Magnolia:			
Davis	13- 8-6	3	497
M. Davis	13- 8-6	1	274
Hammond	10- 8-6	3	638
Rhodes	12- 8-6	3	4,542
Van Buskirk	9- 8-6	1	339
McCulloch:			
Bowlegs	22- 8-6	2	405
Mid-Continent:			
Baker	10- 8-6	4	1,405
Bowlegs	22- 8-6	1	45
Smith	12- 8-6	6	590
Minnehoma:			
Bowlegs	15- 8-6	4	350
Prairie:			
Gallagan	22- 8-6	4	302
Harber	10- 8-6	3	3,190
Jones	12- 8-6	6	2,510
Templeton	12- 8-6	6	2,510
Whitney	23- 8-6	4	335
Pure Oil:			
Reed	14- 8-6	15	2,512
Strother "D" 11 &	14- 8-6	4	367
Sother "F"	10- 8-6	4	1,445
Roxana:			
Taylor	16- 8-6	5	582
Shaffer:			
Lacy	14- 8-6	3	345
Sinclair:			
Bowlegs	22- 8-6	1	80
Cumsey	10- 8-6	4	4,170
Ellen	11- 8-6	7	1,376
Harjo	14- 8-6	3	560
Jones	9- 8-6	6	3,515
Taylor	10- 8-6	4	2,539
W. Taylor	10- 8-6	1	1,082
Walker	22- 8-6	4	1,022
Texas:			
Reed	14- 8-6	11	2,630
Tidal:			
Grayson	13- 8-6	4	555
Harjoche	10- 8-6	6	1,805
Twin States:			
Jones	11- 8-6	3	95
Total		311	74,728

Earlsboro Pool

Amerada:			
Anderson	15- 9-5	2	1,145
Cowden	4- 9-5	8	1,765
Rogers	3- 9-5	2	925
Atlantic & Sinclair:			
Foreman	18- 9-5	1	174
Barnsdall:			
Brown	10- 9-5	4	1,820
F. Bruner	2- 9-5	2	908
N. Bruner	10- 9-5	4	1,674
Cudjo	14- 9-5	1	26
D. Davis	11- 9-5	3	686
J. Davis	11- 9-5	4	391
M. Davis	11- 9-5	2	107
Gibson	9- 9-5	8	3,095
Hern	15- 9-5	1	4
Ingram	1- 9-5	8	2,222
S. Pack	10- 9-5	4	225
Peter	10- 9-5	4	334
Sango	1- 9-5	3	6,544
Sebolka	15- 9-5	1	587
H. Sullivan	11- 9-5	1	....
Sull-Harjo	10- 9-5	2	58
Wasutke	12- 9-5	4	2,133
Carter:			
Davis	13- 9-5	2	550
Payne	12- 9-5	3	70
Sango	1- 9-5	4	2,120
Continental:			
Kays	2- 9-5	2	135
Spencer	12- 9-5	4	625
Crosbie:			
Bryant	9- 9-5	2	....
Empire:			
Barker	12- 9-5	1	1,040
Edmondson	3- 9-5	3	1,143
Gypsy:			
Bora	16- 9-5	1	....
Bruner	10- 9-5	4	2,952
B. Carter	11- 9-5	9	3,485
Earl	16- 9-5	1	17
Hunick	5- 9-5	1	2,312
No le	12- 9-5	4	3,177
Peter	10- 9-5	3	180
Sango	1- 9-5	5	4,677
State	16- 9-5	4	1,590
Independent:			
Bruner	10- 9-5	4	345
Sullivan	10- 9-5	3	32
Knapp	8- 9-5	4	2,005
Independent-Margay:			
Gains	11- 9-5	4	985
Odell	4- 9-5	1	....
Interocean:			
Payne	12- 9-5	1	....
Magnolia:			
Bryant	9- 9-5	6	1,341
Cowden	4- 9-5	4	80
Dixon	12- 9-5	1	....
Edmondson	3- 9-5	3	30
Holmsley	11- 9-5	8	2,352
Ingram	10- 9-5	1	30
Lena	10- 9-5	3	80
Seay	2- 9-5	9	3,538
Simpson	10- 9-5	3	386
Sparks	11- 9-5	7	726
Sullivan	12- 9-5	3	125
Mid-Continent:			
McCumber	9- 9-5	7	335
Mid-Kansas:			
Anderson	14- 9-5	2	140
Phillips:			
Dunaway	14- 9-5	1	28
Gram	9- 9-5	4	172
Prairie:			
Baker	24- 9-5	1	50
Davis	13- 9-5	5	3,925
C. Graham	3- 9-5	2	40
O. Graham	10- 9-5	4	1,340
Stidham	11- 9-5	13	4,500
Roxana:			
Bayless	17- 9-5	1	12
Spencer	12- 9-5	2	1,609
Shaffer:			
Clark	1- 9-5	6	995
Sinclair:			
Foreman	18- 9-5	1	15
Hollins	12- 9-5	2	....
Sango	2- 9-5	3	5,060
Skelly:			
Spencer	12- 9-5	1	650
Texas:			
Anderson	2- 9-5	6	475
Brown	10- 9-5	8	1,980
Rogers	5- 9-5	4	3,750
Wilmott	10- 9-5	7	1,920
Tidal:			
Watkins	9- 9-5	3	3,090
Twin States:			
Barker	12- 9-5	4	100
Hern	2- 9-5	4	2,020
Total		284	93,167

Seminole Pool

Amerada:			
Fix'co	23- 9-6	4	863
Killingsworth	23- 9-6	4	201
Rentie	23- 9-6	3	660
Atlantic:			
N. Cudjo	35- 9-6	3	417
Barnsdall:			
Carter	24- 9-6	8	1,196
Henry	14- 9-6	2	312
Jones	34- 9-6	4	1,195
Carter Oil:			
B. Carter	24- 9-6	2	220
F. Carter	23- 9-6	3	22
J. Carter	24- 9-6	3	62
Creamer	34- 9-6	2	30
R. Cudjo	35- 9-6	4	185
W. Cudjo	34- 9-6	2	30
Gilliland	27- 9-6	1	340
Grisso	23- 9-6	5	575
M. Grisso	15- 9-6	1	245
G. F. Killings	14- 9-6	4	510
M. E. Killings	23- 9-6	12	6,170
Knapp	13- 9-6	3	47
Lukes	27- 9-6	7	1,245
Pounder	34- 9-6	2	40
Simpson	35- 9-6	3	50
Strothers	34- 9-6	4	380
Vierson	23- 9-6	3	360
Empire:			
Gross	25- 9-6	3	75
Wilson	34- 9-6	2	240
Gypsy:			
Butler	35- 9-6	4	1,335
Carter	24- 9-6	8	430
Cudjo	34- 9-6	5	525
Fix'co	26- 9-6	7	180
Harjo	25- 9-6	3	1,092
Wolfe	26- 9-6	6	225
Independent:			
P. Fixico	23- 9-6	3	315
Harjo	25- 9-6	3	225
Butler	35- 9-6	3	780
T. Fixico	24- 9-6	8	654
Jones	26- 9-6	4	510
I. T. I. O.:			
Allen	25- 9-6	2	258
Bowlegs	26- 9-6	12	2,431
Goodin	23- 9-6	4	360
Harjo	23- 9-6	3	115
James	24- 9-6	2	266
Reed	24- 9-6	1	16
Kingwood:			
Johnson	22- 9-6	3	1,259
Magnolia:			
Boren	2- 8-6	1	28
Franks	25- 9-6	4	616
Mid-Continent:			
Rentie	14- 9-6	9	715
Tayeche	24- 9-6	7	220
Mid-Kansas:			
Johnson	25- 9-6	2	40
Phillips:			
Strothers	27- 9-6	2	150
Prairie:			
Gross	25- 9-6	5	115
Mason	36- 9-6	1	75
Spencer	13- 9-6	1	10
Strothers	27- 9-6	8	1,635
Pure Oil:			
Strothers	26- 9-6	17	5,856
B. Strothers	36- 9-6	5	1,714
C. Strothers	34- 9-6	1	....
Roxana:			
Harber	22- 9-6	2	264
Lasley	22- 9-6	2	30
Sinclair:			
Carter	13- 9-6	2	25
Cudjo "A"	35- 9-6	6	1,355
Cudjo "B"	35- 9-6	4	970
Dicey	22- 9-6	2	1,240
Fixico	23- 9-6	4	1,050
Slick:			
Cudjo	35- 9-6	3	750
Franks	35- 9-6	7	1,683
Giblet	35- 9-6	3	1,871
Tiger	1- 8-6	1	20
Superior:			
Cudjo	35- 9-6	4	635
Texas:			
Mayhue	14- 9-6	1	300
Strothers	2- 9-6	1	130
Tidal:			
Carter	24- 9-6	4	685
Fixico	26- 9-6	6	964
Harjo	25- 9-6	3	740
T. Harjo	23- 9-6	6	175
Mahardy	24- 9-6	2	24
Turman:			
Cudjo	35- 9-6	4	908
Grisso	35- 9-6	1	252
Jones	34- 9-6	4	1,412
Total		310	53,293

Searight Pool

Amerada:			
Johnson	4- 9-6	1	70
Strothers	3- 9-6	2	1,457
Carter:			
Davis	4- 9-6	6	940
Frazier	3- 9-6	6	2,720
Johnson	3- 9-6	1	2
Kiker	3- 9-6	1	25
Mandler	3- 9-6	2	25
Scott	26-10-6	1	20
Gypsy:			
Cudjo	4- 9-6	3	680
Mid-Continent:			
Grayson	34-10-6	6	50
Davis	33-10-6	4	1,630
Pine:			
Lula	4- 9-6	1	30
Prair'e:			
Cannon	33-10-6	1	10
J. Carter	10- 9-6	1	....
Houch	33-10-6	1	5
Kincaid	33-10-6	5	65
Varnum	5- 9-6	1	....
Wimer	22-10-6	1	15
Pure:			
Aldridge	3- 9-6	6	3,173
Roxana:			
Strothers	3- 9-6	4	1,293
Sinclair:			
Polly	3- 9-6	4	1,800
Superior:			
Varnum	4- 9-6	1	62
Texas:			
Fleet	4- 9-6	1	37
Twin States:			
Varnum	4- 9-6	2	480
Wilcox:			
Chupco	4- 9-6	8	2,728
Total		70	17,317

Totals

Field—	Wells	Prod.
Little River	109	40,279
Maud	2	350
Bowlegs	311	74,728
Earlsboro	284	93,167
Seminole	309	53,293
Searight	70	17,317
	1,085	279,133

Tex.-La.-Ark. District Engineers and Field Men Organize Apr. 25

The organization meeting of the Tex-La-Ark district of the A.P.I. division of Development and Production Engineering will be held in Fort Worth, Tex., on April 25 in the Texas Hotel At this organization meeting the vice chairman and secretary will be elected and the other necessary committees appointed to complete the organization.

The afternoon will be devoted to the presentation and discussion of specially prepared papers from various sections of this district. These papers will be of particular interest to the field men. One of the fundamental reasons for the forming of this division in the institute was to provide a point of contact between the field men in the various oil-producing districts and afford them an opportunity to get together from time to time and discuss problems of mutual interest and compare methods and practices. This division should also serve as a point of contact between the production engineer and the field man, each of whose work supplements the other. It is hoped that these meetings will bring about a broader understanding between the engineer and the field man, in as much as each has knowledge that is vitally necessary to the other.

At the afternoon session special papers will be read as follows:

"Modern Deep Well Drilling and Production Practice in the Gulf Coast of Texas and Louisiana Fields," by M. E. Schwartz, Rio Bravo Oil Co., Houston, Tex.

"Drilling and Production Methods in the Arkansas and North Louisiana District," by W. W. Scott, Pure Oil Co., Tulsa.

"Drilling and Production Practices in the Permian Basin of West Texas," by F. S. Seeley, Humble Oil & Refining Co., Wink, Tex.

COOPER

THE C. & G. COOPER COMPANY

1111 Magnolia Bldg., Dallas

649 S. Olive St., Los

ENGINES

In the First Commercial Helium Plant in the World

Fifteen hundred dollars a cubic foot was the price paid for helium at the outbreak of the world war. Through constant research and improved equipment it can now be sold for thirty-five dollars a thousand cubic feet.

The first corporate owned plant in the world built at Dexter, Kansas, by the Helium Company is pictured at the left. The process of manufacture from natural gas is chiefly one of compression, and since the pressures are so high, the major item of expense is ordinarily for power. Continuity of operation is also a big factor in reducing costs.

It is again significant that Cooper four-cycle gas engines and compressors should be chosen for such service. Cooper engines have a well earned reputation for low cost operation and reliability. One plant of thirty-six Cooper 170 B.H.P. units showed an operating record of 99.8% for the month of February.

PANY, MOUNT VERNON, OHIO

604 Kennedy Bldg., Tulsa

St., Los Angeles

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 40)

Gulf Prod. Co.'s No. 4 J. B. Bowers, SE SW SW, Gulf lease in Sec. 89, Blk. B-2 ..... C.W., 3,098 ft; 1,500 ft. oil.
Gulf Prod. Co.'s No. 5 J. B. Bowers, SW SE SW, Gulf lease in Sec. 89, Blk. B-2 ..... 200 ft. oil; T.D., 3,080 ft; C.O.
Gulf Prod. Co.'s No. 1 M. Davidson-A, 330 ft. from S and E lines of NW cor. E half NW, Sec. 87, Blk. B-2, H.&G.N. Sur. ..... C.O., 3,088 ft.
Gurnsey Oil Co.'s No. 2 B. E. McKinney, Sec. 163, Blk. 3, I.&G.N. Sur. ..... Show oil, 3,025-30 ft; drlg., 3,190 ft.
Hardendorf Drlg. Co.'s No. 1 G. A. Henderson, NE E half NE, Sec. 17, Blk. 25, H.&G.N. Sur. ..... Run. 10-in. csg., 590 ft.; S.D.
Hickory O. & G. Co.'s No. 1 Lester, SE cor. NW NW, Sec. 1, Blk. 1, A.C.H.&B. Sur. ..... Spudding.
Lefors Pet. Co.'s No. 2 J. M. Shaw, NW cor. T. Leach Sur. ..... Drlg. lime, 1,775 ft.
McAuley et al's No. 1 Morse, SE cor. N half, Sec. 3, Blk. 24, H.&G.N. Sur. ..... Flowed 120 bbls. 24 hrs. from G. W., 2,386-2,535 ft; may d.d.
McElroy Oil Co.'s No. 1 M. B. Davis, NE cor. S 240 acres of E half, Sec. 12, Blk. 1, A.C.H.&B. Sur. ..... Drlg., 500 ft.
Majestic Oil Co.'s No. 6 J. B. Bowers, Sec. 89, Blk. 2-B. ..... S.O., 2,700 ft.; show wtr., 3,450-55 ft; drlg., 3,940 ft.
Magnolia Pet. Co.'s No. 1 J. Bowers ..... Made 100 bbls. tally from G.W. 2,853-55 ft.; swbd. 206 bbls. last 24 hrs; T.D., 3,040 ft; to D.D.
Magnolia Pet. Co.'s No. 1 W. Harrah, NW cor. NW, Sec. 150, Blk. 3, H.&G.N. Sur. ..... Rig.
Operators Oil Co.'s No. 2 W. Jackson, NW cor. N ½ NE, Sec. 88, Blk. B-2 ..... Flowing and swbng. 400 bbls. daily, 2,851-68 ft; T.D., 2,910 ft; run. liner.
Osborn et al's No. 1 E. E. Barrett, SE cor. NE, Sec. 111, Blk. 3, I.&G.N. Sur. ..... Drlg., 1,200 ft.
Osborne et al's No. 1 J. S. Morse, SW cor. SE, Sec. 1, Blk. 24, H.&G.N. Sur. ..... Rig.
Parker et als' No. 1 Mrs. M. Parker, 990 feet S. & W. NE cor. S 360 acres, Sec. 9, E. N. Lynch Sur. ..... Cellar.
J. T. Parks' No. 1 N. H. Reed, NE cor. W 236 acres N half Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Location.
Pampa Oil Co.'s No. 1 W. R. Campbell, Sec. 90, Blk. 3. ..... 700 ft. wtr., 2,490 ft.; S.D., 2,490 ft.
Phillips Pet. Co.'s No. 1 Davidson (Myson) ..... Cmt. 6-in., 3,100 ft; S.D., 3,157 ft.
Phillips Pet. Co.'s No. 2 Davidson (Myson) NE cor. NW NW, Sec. 87, Blk. B-2, H.&G.N. Sur. ..... Cmt. 8-in., 3,943 ft.
Phillips Pet. Co.'s No. 3 Jackson-Riley, Sec. 88, Blk. B-2, H.&G.N. Sur. ..... Recmntd. 12¼-in., 1,027 ft.; 6,-000,000 ft. gas, 2,590-2,835 ft; cmt. 8¼-in. csg., 2,857 ft; S.D. for orders, 3,120 ft.
Phillips Pet. Co.'s No. 4 Jackson-Riley, SE cor. W half SW, Sec. 88, Blk. B-2 ..... Drlg., 1,360 ft.
Phillips Pet. Co.'s No. 1 C. Reiger-Davidson, NW cor. Sec. 87, Blk. B-2, H.&G.N. Sur. ..... Derrick.
Plains Drlg. Co. and Ray's No. 1 C. Chapman, SE cor. SW NW, Sec. 50, Blk. A-9, H.&C.N. Sur. ..... Drlg., 2,294 ft.
Plains Drlg. Co.'s No. 2 B. Chapman, NE cor. E half NE, Sec. 26, Blk. 1, A.C.H.&B. Sur. ..... Rotary rig.
Plains Drlg. Co.'s No. 1 A. Chapman, 990 ft. N. and 330 ft. W. SE, Sec. 24, J. Davidson Sur. ..... Drlg., 1,790 ft.
Prairie O. & G. Co.'s No. 1 W. Harrah, NE cor. N 80 acres, E 240 acres, Sec. 143, Blk. 3, H.&G.N. Sur. ..... Bldg. derrick.
Purple Sage Oil Co.'s No. 2 E. B. Johnson ..... 2,000,000 ft. gas; drlg., 2,840 ft.
Ray & Massie's No. 2 A. Chapman, SE cor. SW, Sec. 51, Blk. 25 ..... Spud.
Scott & Travis' No. 1 A. Chapman, 990 ft. N. and W. of SE cor. N half SW, Sec. 70, Blk. 25, H.&G.N. Sur. ..... Drlg., 1,000 ft.
St. Clair Oil Co.'s No. 1 C. H. Rowe ..... Spudded and S.D.
St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor. Sec. 35, W. R. Lee Sur. ..... Spudded and S.D.
Shamrock Oil Co.'s No. 1 Chapman, NE E half SW, Sec. 50, Blk. 25 ..... 10,000,000 ft. gas, 2,695-2,715 ft; show oil, 2,743-78 ft; 1 baller wtr. and little oil per hr; drlg., 3,070 ft.
Shamrock Oil Co.'s No. 2 A. Chapman, NW cor. NE, Sec. 50, Blk. 25, H.&G.N. Sur. ..... Rig.
Skelly Oil Co.'s No. 1 Bradford, NE cor. Sec. 118, Blk. B-2, H.&G.N. Sur. ..... 12,000,000 ft. gas, 2,765 ft; swbd. 38 bbls. 12 hrs., 2,944-90 ft; T. D., 3,027 ft; to D.D.
Spartan Oil Co.'s No. 1 J. Hopkins ..... S.D., 2,240 ft.
Sullivan et al's No. 1 A. Chapman-A ..... 23,000,000 ft. gas, 2,280-2,800 ft; S.O., 2,345 ft; fish., 3,130 ft.
Sullivan et al's No. 1 S. A. Cobb, NE cor. NW, Sec. 64, Blk. 25, H.&G.N. Sur. ..... Drlg., 2,220 ft.
Sullivan Oil Co. et al's No. 1 W. Hunsley, NW cor. E half NW, Sec. 55, Blk. 25, H.&G.N. Sur. ..... Location.
Sun Oil Co.'s No. 1 Jackson ..... Top lime, 2,035 ft; S.D., 3,093 ft.
Staggers Oil Co.'s (was Ruby Oil Co.'s) No. 1 B. F. Tally. ..... T.D., 638 ft; S.D.
The Texas Co.'s No. 3 J. B. Bowers ..... Fish., 2,765 ft; 44,000,000 ft. gas.
The Texas Co.'s No. 4 J. B. Bowers, SE cor. SE, Sec. 93, Blk. B-2 ..... Cmtd. 8¼-in. csg. 2,102 ft; cmtd. 6-in., 2,965 ft; 600 ft. oil, 3,150-58 ft; drlg.
The Texas Co.'s No. 1 M. B. Davis, SE cor. NE, Sec. 8, Blk. 1, A.C.H.&B. Sur. ..... Drlg., 2,140 ft.
The Texas Co.'s No. 1 C. Thut, C N half of E 320 A., Sec. 1, H.&G.N. Sur. ..... 10,000,000 ft. gas, 2,426-40 ft; making 1 baller 42 grav. oil per hr., 2,806-15 ft; drlg. G.W., 4,080 ft.
The Texas Co.'s No. 2 C. Thut, SE NW SE, Sec. 1, H.&G.N. Sur. ..... Bldg. derrick.
The Texas Co.'s No. 2 Chapman-B, Sec. 31, Blk. 25, E.&G.N. Sur. ..... Swbd. 250 bbls., 2,818-22 ft; T.D., 2,838 ft.
The Texas Co.'s No. 1 J. E. Williams, NW cor. NE NW, Sec. 7, Blk. 1, A.C.H.&B. Sur. ..... Cmt. 8-in., 1,837 ft.
The Texas Co.'s No. 2 Williams, C NW, Sec. 6, Blk. 1, A.C.H.&B. Sur. ..... Bldg. rig.
Tobias Oil Corp.'s No. 1 W. H. Taylor, C NE, Sec. 10, Blk. B-2 (formerly Smallwood et al's) ..... T.S., 765 ft; drlg., 1,800 ft.
Viola Oil Corp.'s No. 1 G. H. Saunders ..... S.D., 3,020 ft.

HALE COUNTY

Bailey & Young's No. 1 Thomas, Sec. 1, Blk. J.K.L. ..... S.D., 175 ft.
Donnell Pet. Co.'s No. 2 Mullican, NW cor. Sec. 66, Blk. A-3, I.&S.B. Sur. ..... Top pay in sandy shale 495 ft; ¼ baller oil and 3 ballers wtr. per day; S.D., 620 ft.
Donnell Pet. Co.'s No. 1 Mullican, C Sec. 31, Blk. B, R. M. Thompson Sur. ..... 200 ft. fluid in hole from 407-14 ft; S.D.
Explin Co.'s No. 1 Goodman ..... S.D., 350 ft.
A. E. Wimm's No. 1 W. A. Ritcher, 700 ft. from east line and 1,200 feet from south line, Sec. 17, Blk. X, John Glynn Sur. ..... S.D., 1,140 ft.
Tolbert & Simm's (was Gouldy & Stone's) No. 1 Kitteral, SE cor. NW, Sec. 45, Blk. A-9, G.C.&S.F. Sur. ..... S.D., 495 ft.

HALL COUNTY

Briscoe Oil Assn's (was Seifert et al's) No. 1 Owens, C NE, Sec. 179, Blk. S-5, Dennison & Pacific Sur. ..... Spudded and S.D.

HANSFORD COUNTY

Caldwell et al's No. 1 J. Adriance est. ..... S.D., 2,000 ft. for fuel.
Oklavania et al's No. 1 Coots, Sec. 13, Blk. 45, H.&T.C. Sur. ..... Cmt. 10-in. csg., 990 ft; S.D., 2,-527 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood ..... S.D., 1,455 ft. to install rotary.

HARTLEY COUNTY

Amarillo Oil Co.'s No. 7 Lee Bivins "A," C NE, Sec. 7, Blk. 25, E.L.R.R. Sur. ..... Location.
Amarillo Oil Co.'s No. 8 Lee Bivins "A," 100 ft. E. of CWL, Sec. 4, Blk. 25, E.L.R.R. Sur. ..... Rig.
Amarillo Oil Co.'s No. 9 Lee Bivins "A," C NW, Sec. 6, Blk. 21 ..... Cellar.

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 2 J. M. Sanford, Sec. 33, Blk. 44, H.&T.C. Sur. ..... Drlg., 1,210 ft.
R. G. Barnum et al's No. 1 Garland Sanford, Sec. 78, Blk. 44 ..... Rig.
Barnum & Delmar's No. 1 Johnson Bros., NW cor. E half, NW, Sec. 37, Blk. Y, A.&B. Sur. ..... Rig.
Beam et al's No. 1 Cockrell, Sec. 3, Blk. 23 ..... S.D., 405 ft. for orders.
Big Coach Oil Co.'s No. 1 Dunnaway, Sec. 5, Blk. Y ..... S.D., 750 ft.
Conklin et al's No. 1 Johnson, Sec. 1, Blk. X03, H.&O. B. Sur. ..... S.D., 600 ft.
Dixon Creek Oil Co.'s No. 1 Burnett est., NW cor. of E 240 A of N 320 A, Sec. 120, Blk. 5, I.&G.N. Sur. ..... 6,000,000 ft. gas, 2,775 ft; small show oil, 3,060-65 ft; T.D., 3,-260 ft; plugged back to 3,125 ft; C.O.
Friedman et als' No. 1 J. O. Bost, SW cor. Sec. 9, Blk. Y-2, T.T.R.R. Sur. ..... Rigging up.
Gulf Prod. Co.'s No. 40, C. L. Dial et al, 925 ft. N. 463 ft. E SW cor. John W. King Sur. ..... Location.
Gulf Prod. Co.'s No. 41 C. L. Dial et al, Sec. 130, Blk. Z, E.L.&R.R. ..... Location.
Harris et al's No. 1 J. Q. Bost, Sec. 10, Blk. Y-2, T.T. R.R. Sur. ..... Drlg., 2,565 ft; 20,000,000 ft. gas.
Holmes & Quinn's No. 1 J. K. Quinn, SW cor. Sec. 9, Blk. 3, B.S.&F. Sur. ..... Drlg., 3,040 ft; small show oil, 3,010 ft. in lime.
McKinney Gas Co.'s No. 1 F. P. Works, SW cor. Sec. 5, Blk. Y-2, T.T.R.R. Sur. ..... Spud.
Phillips Pet. Co.'s No. 3 Garland, Sec. 77, Blk. 46 ..... Drlg., 620 ft.
Phillips Pet. Co.'s No. 12 Elva-Whittenburg, E. Tomlinson Sur. ..... T.A., 4,445 ft.
Phillips Pet. Co.'s No. 2 Chap, NE cor. E 80 acres of the S 160 acres of Sec. 78, Blk. 46 ..... Drlg., 900 ft.
Phillips Pet. Co.'s No. 2 Land, NW cor. of E 40 acres, N 80 acres of S 320 acres, Sec. 83, Blk. 46 ..... Drlg., 325 ft.
Skelly Oil Co.'s No. 2 Armstrong & Byrd ..... Set 12-in. csg., 1,425 ft; cmtd. 10-in. csg., 1,553 ft.; drlg. 2,612 ft.
Skyrocket Oil Co.'s No. 1 Mrs. R. A. Jameson ..... 800 ft. oil in hole from 3,146 ft; drilled to 3,130 ft; shot with 60 qts., 3,125-60 ft; bridged; no increase in oil after deepening; pumped 25 bbls. in 5 hrs; to put on gas lift for test.
Timms & Dietsch's No. 1 C. R. Garner, NE cor. W 80 of SE, Sec. 124, Blk. 4, I.&G.N. Sur. ..... Bldg. rig.
Wendell et al's No. 1 Johnson Bros., Sec. 1, Blk. X03 ..... Set 10-in. csg., 2,035 ft.

KING COUNTY

Humble O. & R. Co.'s No. 1 Pitchfork, Sec. 171, Blk. A-98, John H. Gibson Sur. ..... Hole full wtr., 3,375 ft; drlg., 3,-960 ft.
A. L. Pattison's No. 1 Patton ..... Slight show gas, 2,115-20 ft; fish., 3,410 ft.

LAMB COUNTY

Dan Freel et al's No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ..... Spudded and S.D.
Spade Oil Co.'s No. 1 Andrews, 1,085 ft. from N line and 900 ft. from E line, Labor 23, League 643, (5 miles NE of Littlefield) ..... Spudded and S.D.
Tolbert & Simms' No. 1 Ellwood, NE SW SW, Sec. 14, Blk. B, R. M. Thompson Sur. ..... 712 ft; small show oil and hole full wtr.; dry, 1,504 ft; temp. abd.

LIPSCOMB COUNTY

McCorkle's No. 1 A. Barton, NE cor. SW SE, Sec. 504, Blk. 43, H.&T.C. Sur. ..... Wtr. in lime, 4,126-40 ft; 6-in. set 4,155 ft; 5 3/16-in. csg. set, 4,-420 ft; S.D., 4,775 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch ..... Small show oil, 1,133-40 ft. in sand; S. D., 2,730 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Thompson-Amarillo, C Sec. 22, Blk. 26, E.L.&R.R. Sur. ..... Cmtng. 12-in. csg., 1,320 ft.
Amarillo Oil Co.'s No. 1 J. T. Sneed, Jr., C W 640 acres, Horace Hall Sur. ..... Bldg. rig.
Amarillo Oil Co.'s No. 1 D. P. Seay, C, Sec. 35, Blk. 2, G.&M. Sur. ..... Rig.
Amarillo Oil Co.'s No. 1 L. H. Crawford, C SE Sec. 26, Blk. P. M., E.L.R.R. Sur. ..... Spudding.
Prairie and Shamrock's No. 2 Gober, Sec. 16, Blk. M-21. ..... T.D., 2,520 ft; recmtd. csg., 2,636 ft.

MOTLEY COUNTY

Explin Co.'s No. 1 Burleson ..... Spudded and S.D.
Explin Co.'s No. 1 Tillson ..... S.D., 750 ft. for repairs.
Explin Co.'s No. 2 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. ..... S.D., 1,002 ft.
Exploration Co.'s No. 3 Matador Land & Cattle Co., C SE, Sec. 21, Blk. O-2, W.T.R.R. Sur. ..... Rig on ground.
Matador Oil Corp.'s (formerly Wheeler et al's) No. 1 C. D. Bird, SW cor. NW, Sec. 4, Blk. S, Stephens Sur. ..... Drlg. up baller, 555 ft.

OCHILTREE COUNTY

W. G. Burton's No. 1 Strickler ..... Drlg., 4,005 ft.

POTTER COUNTY

Amarillo Oil Co.'s No. 1 Masterson-K, C SW, Sec. 35, Blk. O-18, D.&P.R.R. Sur. ..... Recmntg. 12¼-in. csg., 1,000 ft.; show gas 1,650 ft; T.D., 2,440 ft; S.D. 10,000,000 ft. gas showing little wtr., 1,650-60 ft and 2,215-90 ft; run. 6-in., 2,440 ft.
Amarillo Oil Co.'s No. 1 Fuqua, C NW Sec. 18, Blk. 6, B.S.&F. Sur. ..... Drlg., 2,710 ft.
Amarillo Oil Co.'s No. 4 Lee Bivins-A, NW cor. NW, Sec. 32, Blk. B-11, E.L.R.R. Sur. ..... Location.
Amarillo Oil Co.'s No. 1 Lee Bivins-E, C NW, Sec. 27, Blk. O-18, D.&P.R.R. Sur. ..... Bldg. rig.
El Rio Oil Co.'s No. 1 River Red, 530 ft. N and 670 ft. W of NE cor. Sec. 106, Blk. 46, H.&T.C. Sur. and in Canadian River Bed ..... Drlg., 1,710 ft.
Frank Allen et al's No. 1 W. H. Bush ..... Fish., 410 ft.; corrected; T.D.

RANDALL COUNTY

Westbrook Oil Co.'s No. 1 J. Beckman, SW cor. SE NE, Sec. 46, Blk. B-5 ..... S.D. for orders 3,712 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Mrs. H. Ledrick & Sons, Sec. 7, Blk. 5-A ..... Show gas, 4,990 ft.; show oil, 4,-992 ft.; csg. set, 4,992 ft.; T.D., 5,152 ft.; set 3-in., 5,155 ft.; S.D., 5,240 ft.

SWISHER COUNTY

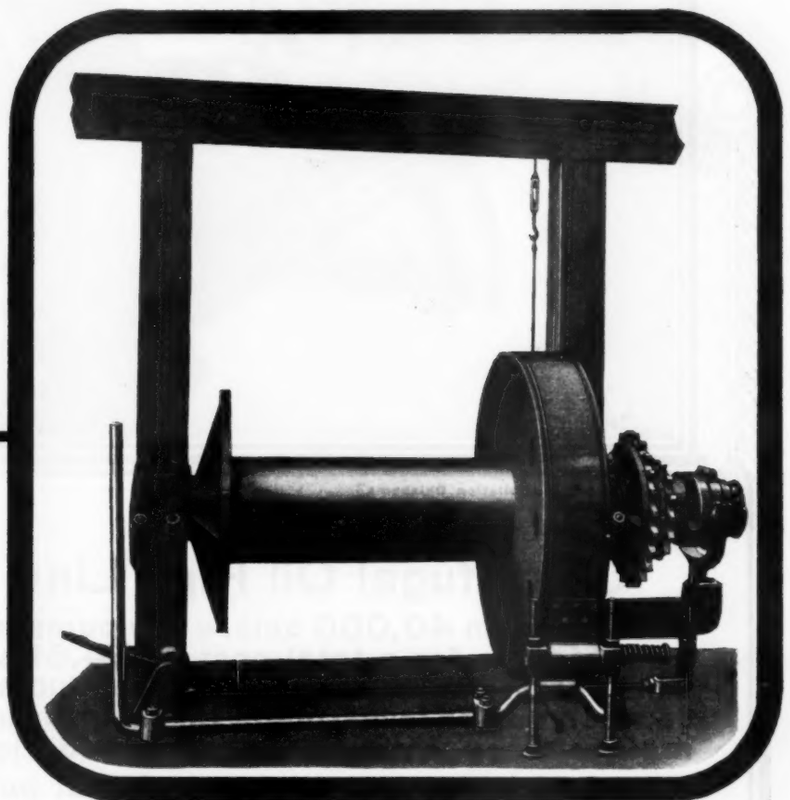
Adams & Pritchard's No. 1 Crawford, Sec. 39, Blk. W-1, T.T.R.R. Sur. ..... S.D., 440 ft.

WHEELER COUNTY

Angus et als' No. 1 T. Trostle, C NE NW, Sec. 90, Blk. 17, H.&G.N. Sur. ..... Location.
Byrens et al's No. 1 Johnson, SW cor. NE, Sec. 88, Blk. A-5, H.&G.N. Sur. ..... Fish, 10-in. csg., 850 ft.
Chapman & Morgan's No. 1 Otis Hacher, NW cor. SW SE, Sec. 63, Blk. 17, H.&G.N. Sur. ..... Rigging up.
Clark et al's No. 1 D. Purcell, C NW SW, Sec. 51, Blk. E.&G.N. Sur. ..... Drlg., 1,720 ft; 1,000,000 ft. gas. 1,710 ft.
Hatcher et al's No. 3 fee, C SW SW, Sec. 80, Blk. 23, H.&G.N. Sur. ..... Drlg., 600 ft.
Lone Star Gas Co.'s No. 1 C. George, C SE SE, Sec. 98, Blk. 17, H.&G.N. Sur. ..... Cmt. 8-in. csg., 1,760 ft.
Rook et al's (was Foster et al's) No. 1 S. H. McDonald, SE cor. NW SW N. Lindsay Sur. ..... T.L., 3,040 ft; S.D., 3,607 ft.
L. W. Rook's No. 1 M. Nelson, C SW NE, Sec. 5, Blk. 24, H.&G.N. Sur. ..... Rig on ground.
Smith Brady et al's No. 1 P. J. Sorenson, Sec. 53, Blk. A-4 ..... S.D., 2,120 ft. for orders.
Vaughn et al's No. 1 R. Woodley, C SW NW, Sec. 21, Blk. 24, H.&G.N. Sur. ..... Location.
Vaughn et al's No. 1 A. Wood, C NW SW, Sec. 21, Blk. 24, H.&G.N. Sur. ..... Location.
Vaughn et al's No. 1-B Ackley, C NE NW, Sec. 4, Blk. 27, H.&G.N. Sur. ..... Top G.W., 1,792 ft; drlg., 1,850 ft.
Ranfold et al's No. 1 E. B. Wallace ..... S.D., 300 ft.
Wischkamper's No. 1 Brown-Young, C NW NE, Sec. 55, Blk. 23, H.&G.N. Sur. ..... Bldg. rig.
Wischkamper's No. 1 Gooch-Close, Sec. 81, Blk. 23, H. &G.N. Sur. ..... Rigging up.
Pete Woodley's No. 1 J. Hovle ..... Show gas, 1,700 ft; drlg., 2,140 ft.

NATIONAL TUBING HOIST

Type "BJ"



DESIGN

Single shaft jaw—clutch hoist for handling sucker rods and tubing in connection with pumping units.

DRUM

Sixteen inch O. D. heavy pipe reinforced inside by heavy cast iron spacers between shaft and drum. Extra length of drum permits handling a double of tubing with four lines using only first layer on drum.

CLUTCH and SPROCKETS

Double sprocket of 24 teeth on one rim and 15 on other provides choice of speeds and pulling power by shifting chain.

DESCRIPTIVE BULLETIN
No. 14 N
ON REQUEST

THE
NATIONAL SUPPLY
COMPANIES

RESULTS

[Byron Jackson Installation Oklahoma Pipe Line Company, Henryetta, Oklahoma]

Centrifugal Oil Pipe Line Pumps

In one station 40,000 bbls. a day pumped against 700 lbs. pressure for a total cost of $4.61 per 1000 bbls. This comprises all station costs, including interest and depreciation on investment, taxes, insurance, repair and maintenance, attendance, power, lubricating oil, etc.

Engineers recognize that centrifugal pumps, because of their non-pulsating flow, deliver more oil through a given line at a given pressure than reciprocating pumps.

These facts are substantiated by the experience of numerous stations. Write us for illustrated literature.

SINCE 1872

BYRON JACKSON PUMP MANUFACTURING COMPANY

FACTORIES: BERKELEY, LOS ANGELES, VISALIA

Branches: San Francisco, Portland, Salt Lake, Dallas, Phoenix

BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

EASTERN FIELDS

(Continued from Page 56)

ble Township, Athens County, the New Straitsville Oil & Gas Co.'s test on the Thomas Biddison farm is a duster in the Berea grit.

West Virginia

The West Virginia fields completed but one well better than the average. It is the South Penn Oil Co.'s No. 69 on the O. D. Stockly farm. It produced 45 bbls. the first 24 hours. Roane County has recently become one of the most active in the State.

On Fish Creek, Grant district, Wetzel County, the South Penn Oil Co. has drilled its old No. 17 on the J. T. Morgan farm, a light pumper, from the Big Injun sand through all lower formations to a total depth of 3,260 feet and found nothing. It will now go back and again put it to pumping from the Big Injun sand.

Lewis County

In Hackers Creek district, Lewis County, the McCall Drilling Co. has completed in the Benson sand, to a total depth of 4,300 feet its test on the Edward Bailey farm. It is a gasser good for 250,000 feet. The Standard Gas Co. has completed a test in the same formation (4,067 feet) and has the same kind of a gas well. It is located on the Swisher heirs' farm. The Hope Natural Gas Co. is drilling old No. 2 on the R. Hardman farm from the Gordon to the lower sands. The Carnegie Gas Co. is drilling down an old gas well on the Isaac Hinzman farm. The Standard Gas Co. has a rig up on the Clarksburg Mortgage & Loan Co.'s property. In Geary district, Roane County, G. L. Cabot is rigging up on the J. J. Dickson farm. The United Fuel Gas Co. has started to drill on the M. R. Stump farm.

On McFarlan Creek, Murphy district, Ritchie County, the South Penn Oil Co. has a 10-bbl. pumper in the salt sand at its No. 11 on the Anna M. Wilson farm. In Grant district, the Delta Oil Co. has started to drill a test on the J. W. Goff farm.

Boone County

In Washington district, Boone County, the Hope Natural Gas Co.'s test on the A. C. Canterbury farm is a duster in all sands. In the same district, the same company's test on the Burwell Biaf farm is a gasser in the Big Injun sand. In Peytonia district, the Owens Bottle & Machine Co. has a gas well at a second test on the Lenning heirs' farm. In Washington district, the same company's second test on the D. S. Miller farm is a gas well.

On Lowther Run, DeKalb district, Gilmer County, the Hope Natural Gas Co. has completed a gasser in the Big Injun sand. It is No. 3 on the J. L. Hill farm. In Green district, Wetzel County, Eawe Brothers have drilled their test on the J. E. Snyder farm into the Big Injun sand. It is a gasser, estimated good for 3,000,000 feet.

Gasser in Roane County

On Little Creek, Spencer district, Roane County, Godfrey L. Cabot has completed a second test on the C. C. Goff farm. It is a gasser in the Big Injun sand and good for 1,000,000 feet. It is also showing a little oil. Near the mouth of Tanner Creek, DeKalb district, Gilmer County, Harley Satterfield and others have started to drill a second test on the F. N. Gainer farm. In Cross Creek district, Brooke County, the first well in many months has been completed. It is the DeWitt Oil & Gas Co.'s test on the Wiley Wells farm and estimated good for 7 bbls. a day.

Test Wells Starting

In the West Virginia fields there is still a little test work drilling and starting. On Elk River, Big Sandy district, Kanawha County, the United Fuel Gas Co. has the rig completed and started to drill a test on the King Land Co.'s property. In Sherman district, Calhoun County, the Hope Natural Gas Co. has started to drill on the Annie Boules farm. In Lee district, the same company has started to drill on the C. D. Stalnaker farm. In the same district, the same company is due in the sand on the Don Altiser farm.

In McClellan district, Doddridge County, Godfrey L. Cabot is drilling a second test on the Anthony Harry farm. In Union district, Harrison County, the Reserve Gas Co. is due in the sand on the J. C. Bartlett farm. In Hackers Creek district, Lewis County, the McCall Drilling Co. is down 4,120 feet on the E. D. Bailey farm. In Church district, the Carnegie Natural Gas Co. is drilling to the lower sands its test on the Caleb Freeland farm.

In McKim district, Pleasants County, the Poynter Oil Co. has completed in the Big Injun sand a test on the D. Poynter farm. It is a duster. In Union district, Lincoln County, Ray & McComas have a gasser in the same formation at No. 3 on the Randolph Sias farm.

In Scott district, Putnam County, the Tampico Oil & Gas Co. has a salt sand gasser at a test on the J. W. Mansfield farm. It is good for 700,000 feet. In Carroll district, Lincoln County, the United Fuel Gas Co.'s test on the N. O. Bias farm is a light gasser in the Berea grit.

In Center district, Wetzel County, the Manufacturers Light & Heat Co. drilled its test on the S. and B. Long farm through all sands. It is dry and abandoned. In Hackers Creek district, Lewis County, the Carnegie Natural Gas Co. has a salt sand gasser at No. 3 on the Emily Birf Jackson farm.

Speechley Sand Gasser in Harrison

In Coal district, Harrison County, the Camden Oil & Gas Co. drilled a test on the Pride heirs' farm through the Speechley sand. It is a fair gsaser.

Monongalia County

In Battelle district, Monongalia County, the Cleveland-Cameron Oil Co. has completed a test on the John Kimble farm. It is a gasser in the Bayard sand. In the same district, Patterson & McCracken are fishing at 3,544 feet on the W. F. Taulor farm.

On Lambs Run, Murphy district, Ritchie County, the West Fork Oil & Gas Co. has an 8-bbl. pumper in the Maxon sand at No. 3 on the Lena Anderson farm. On Lowther Run, same district, J. G. Cochran has the rig completed for a second test on his own farm.

In Birch district, Braxton County, the Philadelphia Gas Co. has the road completed to a location on the S. B. Cook farm. In Otter district, same county, the United Gas Co. has made locations on the A. T. Engle, D. S. and C. F. Engle and D. S. Engle farms. In Sheridan district, Calhoun County, Martin Crowley is rigging up on the Pettit-Brown farm.

Southwest Pennsylvania

At Scenery Hill, West Bethlehem Township, Washington County, S. D McCloy & Co. have completed a test on Scenery Hill, Lot 49. It is a duster. In the same township, S. B. McCloy and others have completed a test on the T. A. Hedge farm. It is also a duster. Operations in ths district, quite active a few months ago, have dropped off and at the present time there are but two wells drilling. The Carnegie Natural Gas Co. drilled its test on the R. E. Richardson farm to a depth of 1,200 feet and then abandoned it.

Greene County

In Greene Township, the Greensboro Gas Co. has a duster at a test on the Mary Stewart farm. In the same township, the J. B. Orndoff Co. has a gasser on the Amanda Rice farm. Greene County, the most active in the southwest, shows a sharp decline in operations. At this time there are less than a dozen rigs up and wells drilling.

In Whitley Township, Greene County, the Manufacturers Light & Heat Co. has drilled a test on the Kinsey Lockard farm through all sands and dry. In the same township, the Peoples Natural Gas Co. has completed in the Gordon sand its test on the Kinsey Fox farm. It is a gasser good for 1,000,000 feet. In Greene Township, J. B. Orndoff & Co. has a fair gasser at a test on the Amanda Rice farm. In Perry Township, the Peoples Natural Gas Co. has a 500,000-foot gas well on the Glen Lemley farm. In Greene Township, the Greensboro Gas Co. has now drilled its test on the Mary Stewart farm through all sands and it is dry and abandoned.

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GEOLOGICAL FEATURES OF THE SUNSET FIELD

(Continued from Page 72)

West Coast geologists generally as an "anticlinorium" in which the rocks, in the main sedimentary and ranging in age from Jurassic to post-Tertiary, are greatly folded and faulted. This mountanious belt, as a whole, is composed of a number of ranges which, south of San Francisco, although approximately parallel to each other, trend somewhat more easterly than the belt as a whole, and cut obliquely across it.

In the particular area under consideration the easternmost of these parallel ranges is the Temblor Range, which beads in the vicinity of the north line of Kern County, several miles west of a point south of Tulare Lake (where the Diablo Range ends) and extends southeasterly some 70 miles to a junction with the San Emigdio Mountains. This junction occurs south of Sunset Field, in a general locus, southwesterly of the corner of Sections 13, 18, 19 and 24, Township 11n, Ranges 23 and 24w, S. B. M. This corner is situated near the Hazelton Railway station. The rocks making up the Diablo and the Temblor ranges are of the same general character and are folded in the same general way.

The Temblor Range is essentially a great anticline somewhat broken by faults along its southwestern flank. It is not a simple fold, being rather an assemblage of relatively small anticlines and synclines whose combined effect is represented in the general uplifting of the region.

The rocks exposed in the central portion of the Temblor Range are older than those exposed in the foothills to the northeast, and were subjected to folding in the late middle Miocene period before the younger upper Miocene formations were deposited. The hills thus formed (now occupied by the Temblor Range) and making up this area of high land were composed at the south end of the range, of diatomaceous (Maricopa) shale of middle Miocene age, in which there were a few beds of sand and coarse boulders consisting almost wholly of fragments of granite rocks. This south end of the Temblor Range was then composed, much as it is today, of diatomaceous shales with lenses of coarse material.

The northeastern flank of this range of hills (viz., the surface of the Maricopa shale) had assumed the general form of a monocline, dipping to the northeast. The average course of its strike closely paralleled the main axis of the range, on a general bearing of north 46 degrees west.

Method of Deposition

Subsequent to this folding, and commencing with the upper Miocene age, a long continuous period of deposition has ensued, extending to the present time, the beds that now contain the oil being composed of detritus brought down into the San Joaquin Valley from the high land situated where Temblor and San Emigdio Mountains now stand, most of the debris, in all probability, however, coming easterly from the area now occupied by the Temblor Range.

The lower of these detrital beds, viz., of the McKittrick group (Jacalitos[?] and Etchegoin formations), of upper Miocene and Pliocene(?) age, were composed of poorly consolidated alternating sands, clays and gravels, and were deposited in a continuously sinking basin, in marine and estuarine water, which at first occupied only the San Joaquin Valley, but which later, as the sea gradually enlarged and deepened, encroached upon and finally submerged the high land that then stood on the present site of the Temblor Range. The upper of the beds of the McKittrick group (viz., the Paso Robles, "Tulare" formation), of Pliocene and Pleistocene(?) age, were deposited in brackish or fresh water lakes, or subaerially, and extended southwesterly up the slope of the high land and beyond the northeasterly regions of lower relief then occupied by the Etchegoin.

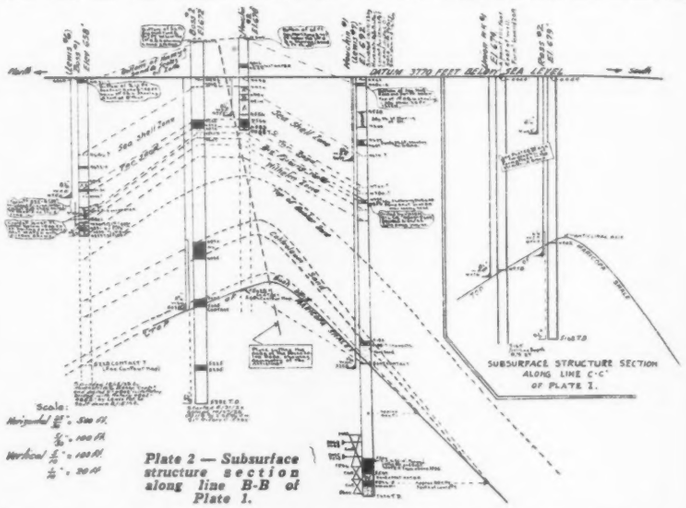

Plate 2 — Subsurface structure section along line B-B of Plate 1.

These beds of the lower McKittrick group (viz., Jacalitos(?) and Etchegoin) rest unconformably on the monoclinal surface of the Maricopa shale and were laid down there in nearly horizontal positions. An individual bed that ended at the then existing shore line of the advancing sea in fact abutted and was truncated against the eroded land mass of Maricopa shale. In this manner the horizontal beds of the lower McKittrick group were deposited one above the other, each upper one overlapping the next lower and occupying a larger area. See Figure 1.

A highly important function of the extant monoclinal form of the surface of the underlying Maricopa shale is its strike, which closely parallels in its bearing the main axis of the Temblor Range. The average bearing of this strike is north 46 degrees west†, and except for minor undulations in the surface of the Maricopa shale resulting from erosion and other causes, each and every successive shore line, or contact line along the northeast flank of the Temblor Range, of the subsequently deposited horizontal lower beds of the McKittrick group, assumed at its inception and continues to lie along, a course having this identical general bearing—regardless of the effect of the dynamic action of subsequent flexuring movements.

Bearing Verified

This general approximate bearing of north 46 degrees west, given herein for this strike may be verified as follows:

	Approx. Bearing
Bearing of exposed base of the one-third of Maricopa shale (Pack), or Santa Margarite (Arnold), against the lower two-thirds Maricopa (Pack), of Monterey (Arnold), along the Temblor Range. See Pack, pp. 116, Geologic Map, Plate 2	N. 47° W
(Note: This indicates the bearing of the main axis of the range.) Bearing of exposed base of Etchegoin (shore line) against Temblor foothills. See Pack, pp. 116, Geologic Map, Plate 2	N. 56° W
(Note: The Echegoin formation is exposed at several points along the eastern flank of the Temblor Range, south of McKittrick, and also in the San Emigdio Mountains. This indicates the bearing of the shore lines of the lower horizontal sediments, situated above the unconformity.) Bearing of contact line (shore line) of the top of the "California" oil sand against the Maricopa shale	N. 47° W.
(Note: This line is determined from actual wells drilled in Sec-	

†Although north 46 degrees west is the general average bearing of the strike of the Maricopa shale monocline along the course of the Midway Valley, slightly different bearings are more correct for use in particular areas within this valley. North 46 degrees west is given here because this average bearing is also particularly applicable to the Sunset oil field.

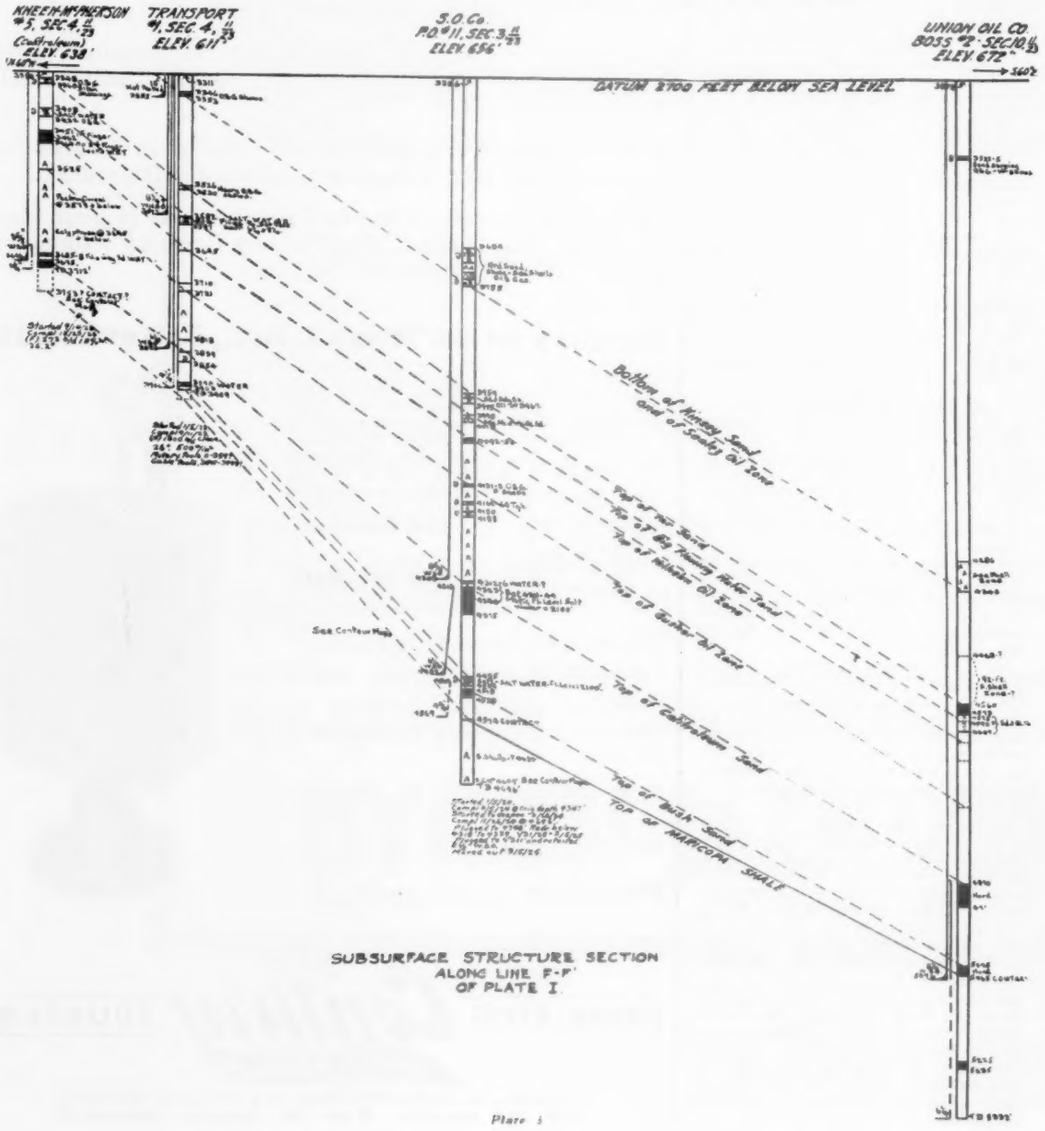
KNEE-MYMPERSON No 5, SEC 4, T 29 (Continuum) ELEV 638'
TRANSPORT 4, SEC 4, T 29 ELEV 611'
S.O. Co. PO #11, SEC 3, T 29 ELEV 656'
UNION OIL CO BOSS #2 SEC 10, T 29 ELEV 672'
DATUM 3700 FEET BELOW SEA LEVEL
Bottom of Ninety Foot Sand
Top of 500 Foot Sand
Top of Big Blowing Hudson Sand
Top of Hudson Oil Zone
Top of Button Bed Zone
Top of Cattleman Sand
Top of Main Sand
TOP OF MARICOPA SHALE
SUBSURFACE STRUCTURE SECTION ALONG LINE F-F' OF PLATE I

Plate 3

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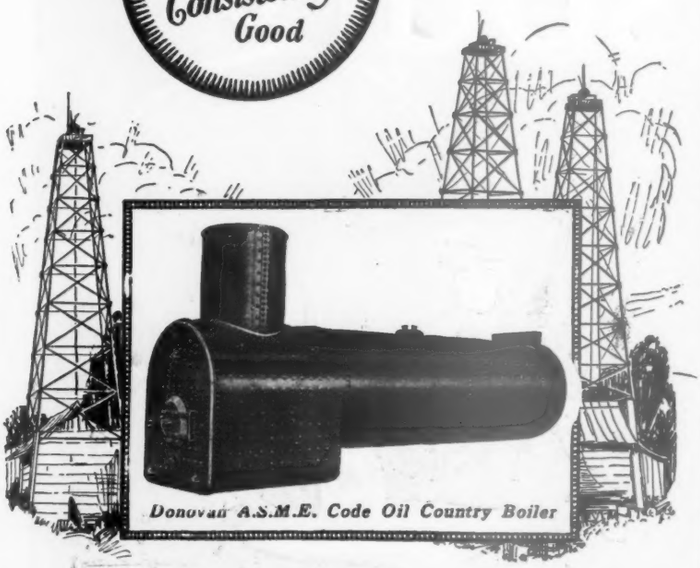

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NONE BETTER

tion 32-12-23 and Section 4-11-23. See Plate 1 of this report.)

Bearing on contact lines (shore line) of the top of the "Gusher" oil zone against the Maricopa shale ..... N. 46° W
(Note: This line is determined from actual wells drilled in Section 32-12-23 and Section 4-11-23. See Plate 1 of this report.)

Bearing on contact line (shore line) of the top of the "Big Flowing Water" sand against the Maricopa shale. See Pack, pp. 116, Plate XLIII ..... N. 46° W
(See Plate 1 of this report.)

Significance of the Uniform Bearing

With this fact as a premise it follows that, except for the minor undulations resulting from erosion and other causes that exist on the surface of the Maricopa shale, having given the location of a point on the shore (or contact) line of any individual bed of the lower McKittrick group, the approximate position of the remainder of the short (or contact) line of that bed, along the northeast flank of the southern portion of the Temblor Range, may be delineated by simply drawing a line on a bearing of north 46 degrees west and south 46 degrees east through the known point.

Similarly, along any line of this bearing in the Sunset Field, the interval between any individual bed of the lower McKittrick group and the underlying surface of the Maricopa shale will be fairly constant, regardless of the subsequent flexuring movements. This interval will doubtless vary somewhat on the crests of anticlines on account of the action of the flexuring stresses and will also vary in accordance with the undulations in the surface of the Maricopa shale, but these variations will not be large.

Testing this premise against conditions known to exist, we learn from Pack (pp. 116) that the top of the "B" oil zone, which is the horizon corresponding to the first finger of the "Top Oil" zone (or approximately the equivalent of the "Scalez Petrolia" marked stratum), lies the following distances above the Maricopa shale at the stated locations.

Center SW Section 36-12-24	100 feet
Center N line Section 36-12-24	400 feet
Center NE Section 31-12-23	700 feet
Center Section 32-12-23	1,000 feet

These intervals show a progressive increase northeasterly down the slope of the Maricopa shale monocline.

Projecting lines on a bearing of south 46 degrees east from the latter two locations, through Sections 32-12-23 and 4-11-23 (Sunset Field), we find that wells drilled into the Maricopa shale along these lines do, in fact, show intervals of approximately 700 feet and 1,000 feet between the top of the "Top Oil" zone and the contact of the Maricopa shale.

Shore lines of similar bearing projected through known contact points of the same oil-bearing sand have proven to be even more convincing in their accuracy.

This method of estimating the position of the top of the "Top Oil" zone with reference to the surface of the Maricopa shale and of estimating the position of the shore lines of individual oil-bearing sands was utilized by the writer as an aid in the correlation of the beds underlying Section 10-11-23 and proved to be of great assistance. See Plates 1 to 5, inclusive, of this report.

Secondary Anticlinal Folds

The outlying hill groups of the present Temblor Range indicate to some extent the lines along which a few of the larger (secondary) anticlinal folds took place. These constitute the topographic reflection of a few of the larger of a great number of anticlines and synclines that resulted from the flexuring movements that took place after the beds of the McKittrick group were deposited. The combined effect of this upward folding of the strata was at its maximum along the line of the main axis of the present Temblor Range.

The dynamic action at this time was the chief agent in producing the structure

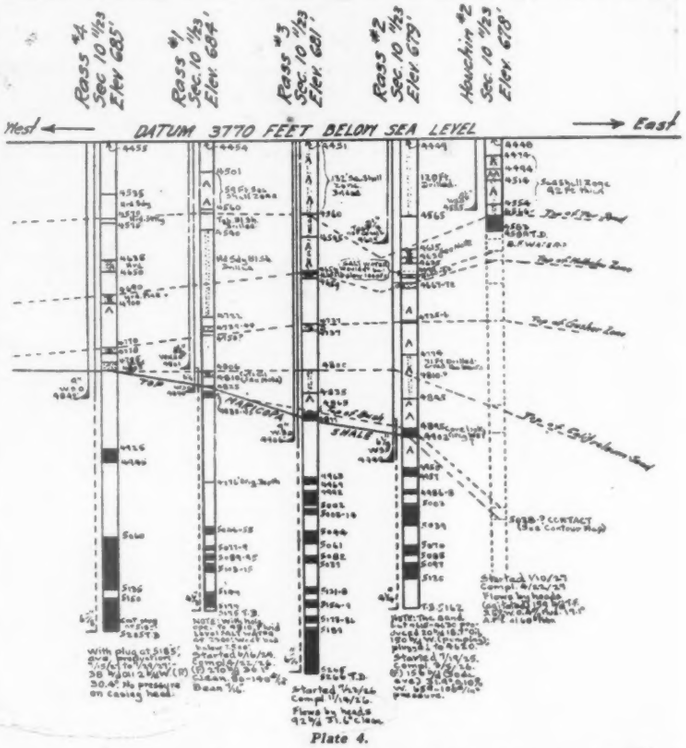

Pass #4 Sec 10 11-23 Elev 685'
Pass #1 Sec 10 11-23 Elev 684'
Pass #3 Sec 10 11-23 Elev 681'
Pass #2 Sec 10 11-23 Elev 679'
Houchin #2 Sec 10 11-23 Elev 678'
West
DATUM 3770 FEET BELOW SEA LEVEL
East
MARICOPA SHALE

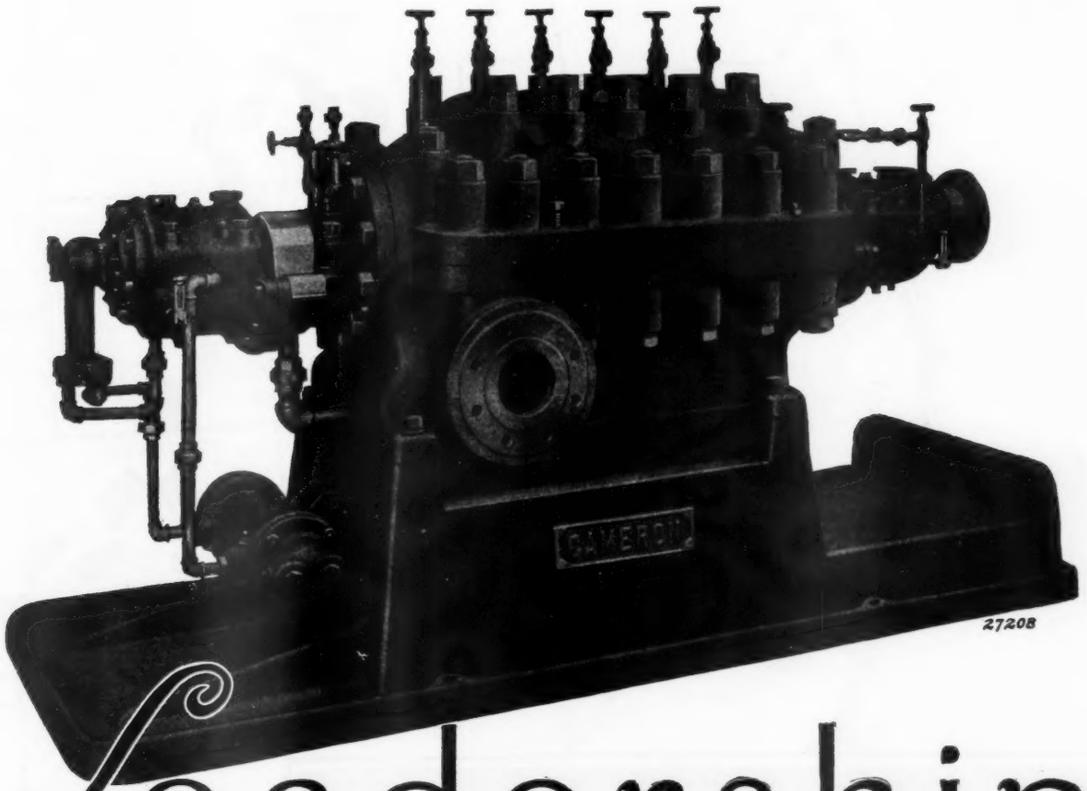
Plate 4.

in this region. It occurred in fairly recent geologic time and affected all the rocks in this area except those of recent age. The greater complexity of the structure in the central part of the Temblor Range is due, mainly, to the fact that it was here that the forces were chiefly active.

However, not a single one of the folds in the foothills can be considered as a distinct and separate feature, isolated from the structural features of the main flexuring movement. They are all, in fact, but spurs that branch out from the major fold of the Temblor Range and overlap one another to a greater or less degree.

Just as the Diablo and Temblor Ranges have a course somewhat more easterly than that of the Coast Ranges as a whole and thus cut obliquely across the mountainous area, so also these minor (secondary) folds are only approximately parallel to the course of the main range and in general have a somewhat more easterly trend. As they extend into the valley they plunge beneath its surface some distance from the main range.

The difference in bearing between the



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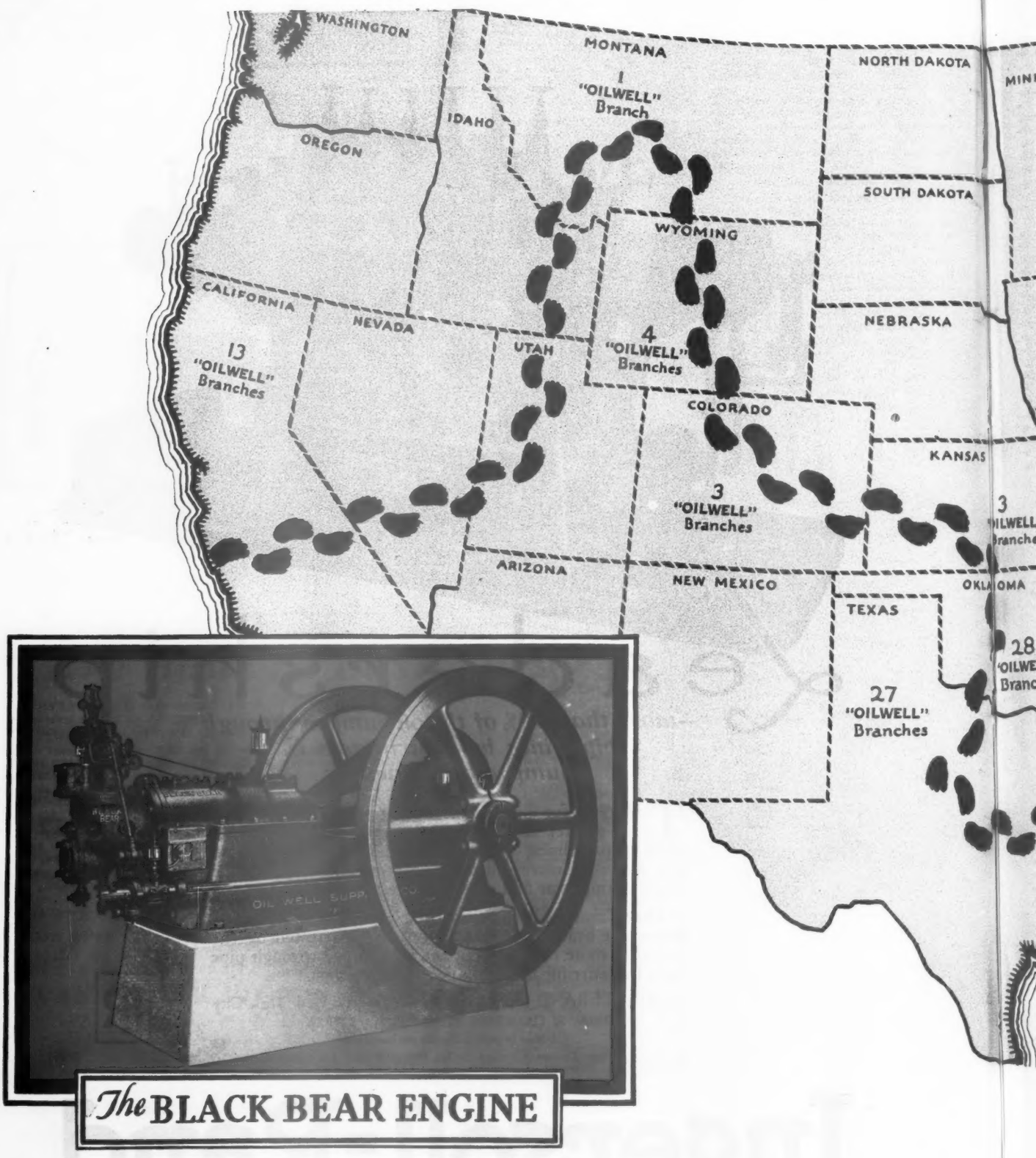

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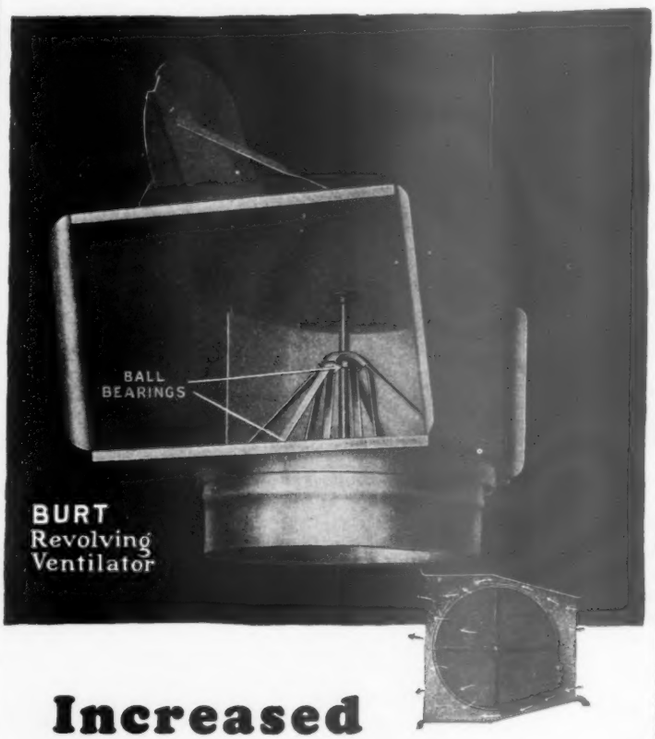

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course of these secondary folds and the trend of the range increases toward the northeast. For example the course of the outermost folds which form the Elk Hills differs about 34 degrees from that of the Temblor Range. In the vicinity of the west half of Section 4-11n-23w, along the axis of the Thirty-five anticline, this angular difference amounts to about 13 degrees. (See Figure 2.)

These obliquely trending anticlines appear very largely to govern the accumulation of oil, as it is about these folds that most of the petroleum is found. They increase in size and number southward along the western border of San Joaquin Valley until at the south end of the Temblor Range they develop into a complicated system.

The Thirty-Five Anticline

The Thirty-five anticline is one of the three chief structural features in the foothills of the main Temblor Range, west of Midway Valley and south of the Globe anticline. It heads near the central part of the range, trends southeasterly, and edges out into the outermost foothills, finally plunging beneath Midway Valley. The anticline is slightly asymmetric (see Figure 2 and Plate 2), the anticlinal axis of the beds in the McKittrick group being slightly northerly of the underlying axis at the surface of the Maricopa shale. The fold is fairly sharply flexed, and the crest along the axis, where the beds have a low dip, is fairly narrow, ordinarily being less than 1,500 feet in width.

The Thirty-five anticline is separated from the Temblor Range on the south by the Phoenix syncline. The axis of this syncline approximately parallels the axis of the anticline, being generally removed from it by a distance of about 4,000 feet.

Practically all of the area included in the eastern part of this anticline is covered with valley alluvium and consequently the subsurface structure must be interpreted from well records. See Plates 2 to 5, inclusive.

In the northwest quarter of Section 4-11-23, this fold plunges southeasterly at an average angle of about 9 degrees, however, it flattens markedly near the center of Section 4. In the southeast quarter of Section 4, the angle of plunge again increases to a marked degree until the northwest quarter of Section 10-11-23 is reached, where a very decided flattening takes place. This undulating effect is typical of the longer secondary anticlines. However, the cause of the decided flattening in the northwest quarter of Section 10 appears to be of a much more fundamental nature than merely following a type.

Transition of Structural Features

At the south end of the Temblor Range, near Sunset Valley, the bearings of the structure lines exhibit a marked change from a southeastward to an eastward trend. It is in this locality that the structure typical of the eastern margin of the Coast Range terminates, in favor of that reflected in the eastward-trending San Emigdio Mountains. The obliquely trending folds so typical of the Coast ranges to the northwest are not found in the locality toward the east, the folding thereafter becoming much more complicated, with an accompanying increase in the faulting of the beds.

The topographic expression of the broader structural features, however, is quite as strongly reflected in the San Emigdio Mountains as in the Temblor Range, for the San Emigdio and the Tehachapi Mountains constitute essentially a fault block that has been uplifted with respect to the valley on the north. Rocks much older than those exposed in the Temblor Range reach the surface in the San Emigdio Mountains and there appears here a fairly complete gradual transition between the structural features of the Coast ranges and those of the Sierra Nevada.

A northeastward-trending line drawn through the corner of Sections 12, 18, 19 and 24, Township 11n, Ranges 23 and 24w, S. B. M. Sunset Field (south of the Hazelton Railroad station) and extending through the center of the north half of northwest section of Section 10-11-23, divides the Midway Valley into two different structural zones. The region northwest of this line is occupied by the closely folded Temblor Range with its relatively gently flexed foothills. These structural features are typically those of the Coast ranges, whereas in the zone southeast of this line there appears, from west to east, a fairly complete gradation toward the structural features of the Sierra Nevada. This eastward zone is occupied by the complexly folded San Emigdio Mountains in which faults become more and more dominating in the structure. The larger structural features are similar in both these zones. However, the lesser features are quite different.

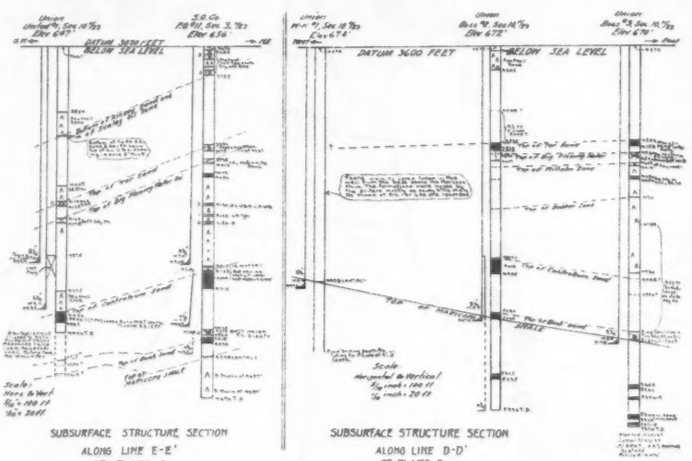
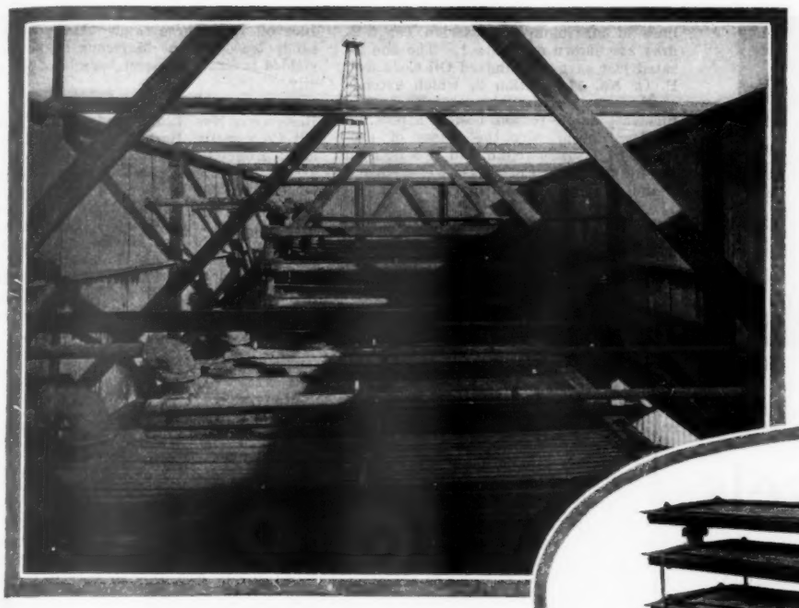


Plate 5.
Subsurface structure section along line A-A of Plate 1.

Change in Structural Features

The definite change in the direction of the axis of the extension of the Thirty-five anticline from a normal southeasterly trend in Section 4-11-23, to an easterly trend in the northeast quarter of Section 10-11-23, marks the beginning of the graduation in structural features from those typical of the Temblor Range to those of the San Emigdio Mountains. East of Section 10 along this anticline to its end the folding will become more complicated, and faulting of the beds may be expected. (See Plate 1.)

The effect of the two sharp bends in the axis of the anticline in the north half of northwest quarter of Section 10 is readily apparent. This bending must necessarily have been accompanied by excessive compressive stresses, such as to overcome the normal cohesion of the strata, and, along the lines of maximum compression (and failure) to have resulted in a local crumbling of the beds. Along these lines of maximum compression, in the soft beds of the McKittrick group, are found the axes of sharply compressed troughs. (See Plates 1 and 4.) In the indurate sediments of the Maricopa shale this failure under compression may have resulted along these lines either in a buckling up-



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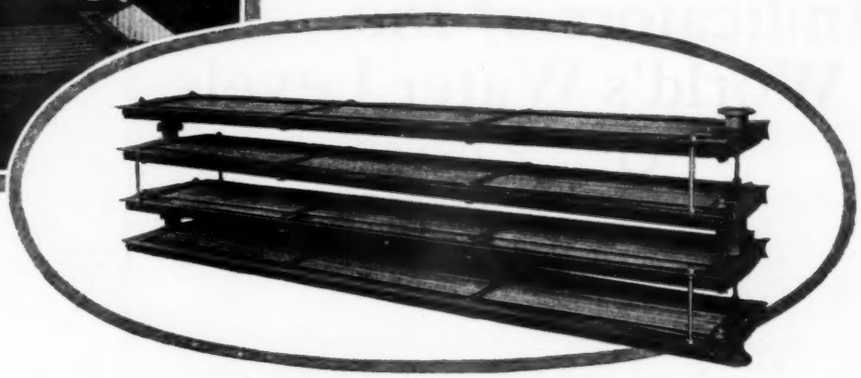

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ward of the strata or in a synclinal crumbling downward or both.

The approximate positions of these two lines of maximum compression (or failure) are shown on Plate 1. The one located just east of Standard Oil Co.'s well P. O. No. 11, Section 3, which extends southwesterly from the anticlinal axis furnishes ample reason, besides a possibly shallow depth, why the lenses of productive oil sands found and produced in the Standard Oil Co.'s Rass wells Nos. 1, 3 and 4, are not found in P. O. well No. 11, Section 3.

Likewise the one located near Union Oil Co. well Whittier-Kent No. 1, Section 10-11-23, which extends northeasterly from the axis down the north flank of the anticline, doubtless explains why the oil sands in the beds of the overlying McKittrick group, logged in Union Oil wells Boss No. 2 and Boss No. 3, were not readily identified in Union Oil Co.'s well, Whittier-Kent No. 1. (See Plates 1 and 5.)

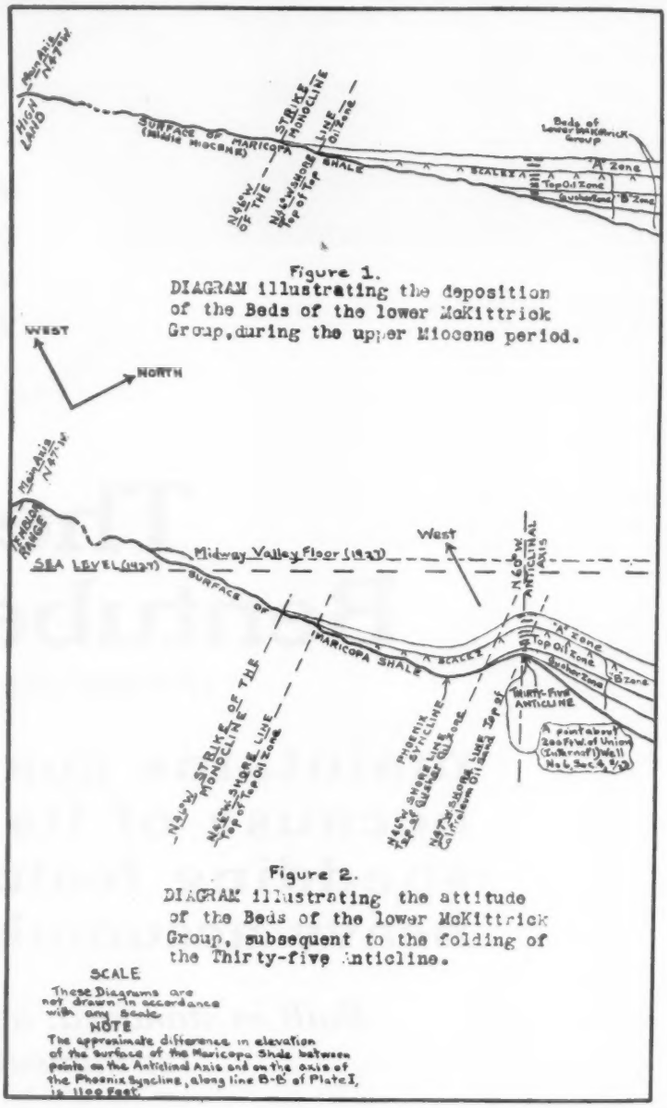


Figure 1.
DIAGRAM illustrating the deposition of the Beds of the lower McKittrick Group, during the upper Miocene period.

Figure 2.
DIAGRAM illustrating the attitude of the Beds of the lower McKittrick Group, subsequent to the folding of the Thirty-five Anticline.

SCALE
These Diagrams are not drawn in accordance with any Scale.
NOTE
The approximate difference in elevation of the surface of the Maricopa Shale between points on the Anticlinal Axis and on the axis of the Phoenix Syncline, along line B-B' of Plate I, is 1100 feet.

Productive Capacity of Maricopa Shale

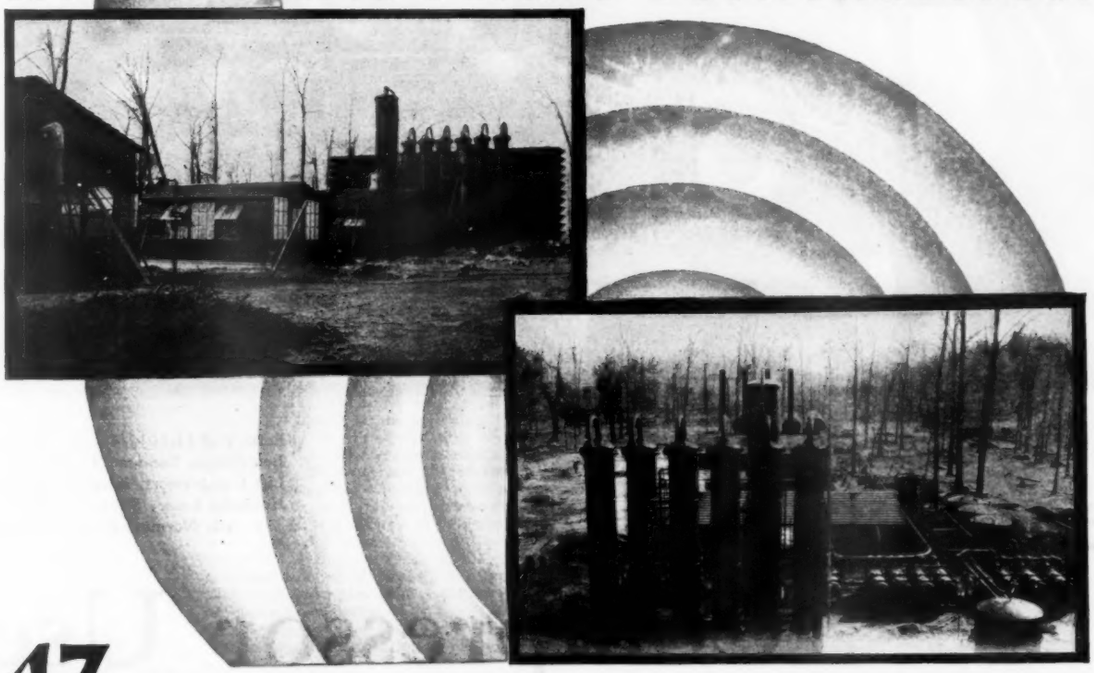
The reservoirs from which the wells along the Thirty-five anticline derive their oil are chiefly the late Tertiary (upper Miocene, and Pliocene?) sandy beds that rest unconformably upon the diatomaceous (Maricopa) shale. Sandy leases within this underlying shale have yielded only a small proportion of the oil, although a great many wells have been drilled below the contact and have found sandy lenses within it. Up to the present time, however, the productive capacity of these lenses has not proved to be very great and, moreover, the moderate amounts of clean oil in these lenses heretofore produced have been confined to locations along the crest of the anticline. These oil-bearing lenses are so irregularly distributed and lenses that contain water are so abundant that it is difficult to produce oil from these sands. Many of the sandy lenses in the Maricopa shale have yielded several thousand barrels of water dily.

In Section 10-11-23, Standard Oil Co.'s Rass wells Nos. 1, 2, 3 and 4, and Union Oil Co.'s wells, Boss Nos. 2 and 3, are now producing light 31-degree A.P.I. gravity oil from these Maricopa shale lenses. In the same section, Union Oil Co.'s well, Whittier-Kent No. 1, is now drilling at a depth of about 200 feet below the top of the Maricopa shale. In Union Oil Co.'s well, Houchin No. 1, a 40-foot sand lense was located about 250 feet below the contact within these shales. This lense, however, was found to be impregnated with only a small amount of oil and to be flooded with salt water. The production was therefore uneconomical. Other wells in this section that have found salt water in these sand lenses in greater or less amount are Standard Oil Co.'s well, Rass No. 4, and Union Oil Co.'s well, Boss No. 3.

It should be stated here that the large production of oil now being obtained by Obispo Oil Co. well No. 6, Section 32-12-23, and Standard Oil Co.'s well No. 140, Section 5-11-23, from horizons below the top of the Maricopa shale should not be confused with the sandy lenses being produced in Section 10-11-23. The oil produced by wells Nos. 6 and 140 is a heavy 20-degree gravity product, and entirely different structural conditions are chiefly responsible for its accumulation.

The remaining wells drilled in Section 10-11-23, viz., Union Oil Co.'s wells,

A RECORD
IN GASOLINE PLANT CONSTRUCTION



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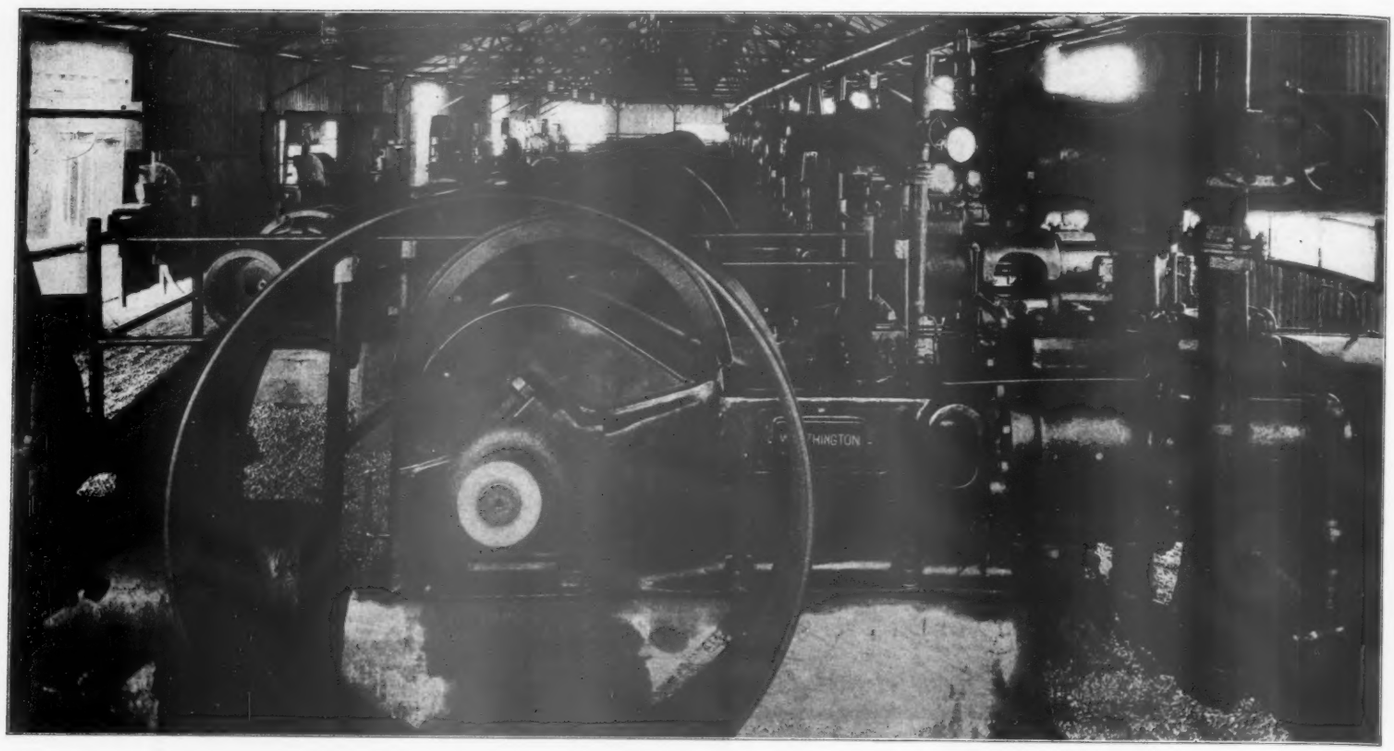

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United No. 1, Boss No. 1, Houchin No. 2, El Camino No. 1 and G. P. No. 1, did not penetrate beds below the sediments of the McKittrick group. (See Plates 2, 4 and 5.)

Union Oil Co.'s well, Boss No. 1, was drilled into the second finger of the "Wilhelm" oil zone, from which in August, 1924, it obtained clean oil.

Union Oil Co.'s well, Houchin No. 2, was drilled into the so-called "Tar" sand, from which it is now producing about 56 bbls. per day of 17.5 per cent gravity heavy oil, fairly clean.

Union Oil Co.'s well, El Camino No. 1, was commenced on March 18, 1911, and abandoned September 16, 1914. Although it was drilled to a total depth of 4,800 feet, the slight oil and gas show shows logged above that depth are not particularly instructive, in as much as it is estimated that the hole did not much more than penetrate the equivalent of the two fingers of the "Top Oil" zone (viz., top of the "B" oil zone).

No information is obtainable as to the record of Union Oil Co.'s well, G. P. No. 1, in the northeast quarter of southwest quarter of Section 10. It is believed, however, to be relatively a shallow hole and therefore not particularly instructive.

"Tar" Sand

A brief description of the character and productive capacity of the so-called "Tar" sand is deemed advisable. The name itself is in fact a misnomer, it having been thus designated by virtue of the relatively heavy gassy oil carried by the sands, which almost invariably shows on the ditch when drilling. For this reason and on account of its widespread occurrence it constitutes one of the few reliable markers in the field. The gravity of the oil is between 14 degrees and 17.5 degrees and this is the lowest gravity of any oil found up to the present time in the lower beds of the McKittrick group, viz., the "B" oil zone. The sand itself has the appearance of a medium to coarse unconsolidated rich, gassy oil sand. It was recently cored (in 1926) in Empire Oil & Gas Co.'s well No. 2, Section 4-11-23, at which location it was 9 feet thick and was flooded at its base with salty edge water. The sand itself is situated stratigraphically some 160 to 220 feet or more below the "Kinsey" oil sand and from 20 to 45 feet above the "Big Flowing Water" sand, all of which are in Pack's "B" oil zone.

Pack reports that prior to July, 1916, a few of the wells drilled near the southwest corner of Section 32-12-23 record this heavy oil lying immediately above the "Big Flowing Water" sand, and that this heavy oil is reported also in a similar position just above the big water sand near the center of Section 4-11-23.

He further states[1]:

"This sand would probably yield a fair production, but the underlying sands are so much richer that it has been disregarded. The heavy gravity of the oil it yields also makes it unattractive at present."

More recently Standard Oil Co.'s wells, P. O. Nos. 25 and 29, along the east line of Section 5-11-23, have tested and produced for a short period this so-called "Tar" sand.

In both these wells, especially in P. O. No. 25, it showed as a rich oil sand with enough gas to almost flow. The production was a clean 14-degree gravity oil at these locations. However, it proved to be noncommercial and production in both these wells was obtained later by backing up the holes and producing the sands at higher levels.

In Section 10-11-23 the oil sand logged in Union Oil Co.'s well, Boss No. 2, at a depth of 4,560 feet and the oil sand produced in Union Oil Co.'s well, Houchin No. 2, from depths of 4,566-4,853 feet are both this same "Tar" sand.

A partial production record of the fluid from this sand from Union's well, Houchin No. 2, follows:

Completion date, April 22, 1927.
Production test, April 25 to 26, 1927:
Produced 159 bbls. per day total fluid, 3.6 per cent water, 0.4 per cent mud, 17.1 degrees gravity, A.P.I. (corrected to 60 degrees Fahrenheit); flowing by heads; agitated.
Average production during May, 1927: 75 bbls. per day oil, 3 bbls. per day water, 17.4 degrees gravity; pumping.
Average production during June, 1927: 54 bbls. per day oil, 1 bbl. per day water, 17.5 degrees gravity; pumping.

[1] See Pack, United States Geological Survey Professional Paper 116, page 142.

Application of Basic Principles

With the foregoing geologic and structural features as a basis, an appropriate application of the known stratigraphy of the field for the purpose of estimating the productive capacity of any property situated therein will prove to be convincingly accurate.

The operation contemplates first, the determination of those oil-bearing sands that are present beneath the property, and second, the location of the property with reference to the axis of the structure and to the various shore lines of the extant oil measures.

The latter determination will indicate the amount of the accumulation of oil to be expected and the possibility of encountering edge water.

In the determination of those oil-bearing sands to be expected under such a property, the consideration of a zone of comparison, which should be appropriately defined by projecting lines north 46 degrees west, or south 46 degrees east, from the boundaries of the property across developed areas in which the underground conditions are known, will result in a fairly accurate estimate of the vertical distance to be expected, for instance, between the top of the "B" oil zone (top of "Top Oil" zone) and the surface of the underlying Maricopa shale.

This vertical interval may be checked by the projection of shore lines of similar bearing across the property, through the known contact points of the various oil sands of this oil zone that are shown to be present beneath it.

The probability of encountering a "new" sand (viz., one not theretofore locally produced) would ordinarily be indicated only in the event that the expected vertical interval between the top of the "B" oil zone and the surface of the Maricopa shale was found to be much greater than that interval previously encountered in any of the other completed wells, and also only in case the northwesterly trending shore line of the stratigraphically deepest known oil-bearing sand extended either across the property or entirely southwest of it.

Under these conditions, and with a favorable structural location, the discovery of a new productive oil sand in this district might normally be expected.

Matter of Conjecture

The possibility of encountering productive oil-bearing sandy lenses within the body of the Maricopa shale must remain largely a matter of conjecture, the only available criteria being the small percentage of successful completions of this character and the fact that most of these have been located along the axial parts or crests of the anticlines.

An example of the application of the foregoing principles for the purpose of estimating the productive capacity of a property will be found by reference to the northwest quarter of southwest quarter of Section 10-11-23, S.B.M., as shown on Plate 1.

This subdivision is located within the structure of the Thirty-five anticline as extended and defined herein. However, on account of its position well down on the southwest flank of the fold, the presence of commercial quantities of oil in the porous rock beneath it must be finally proven by the drill.

In estimating the possibility of production from horizons lying above the surface of the Maricopa shale, those oil-bearing sands to be considered at all must certainly be restricted to those present in the lower McKittrick group, or "B" oil zone (Pack). Of these beds, all of those lying below the lower portion of the "Gusher" oil zone are truncated and delimited by the unconformable surface of the underlying Maricopa shale, on shore lines lying easterly of this subdivision. (See the contact lines of the top of the "Gusher" oil zone and of the next underlying "Calitroleum" oil sand on Plate 1.)

The potentially productive oil-bearing sands embraced in the "B" oil zone that lie stratigraphically above this lower portion of the "Gusher" oil zone must then be duly considered in their relation to the position of the known edgewater

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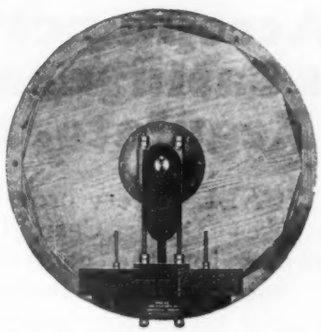

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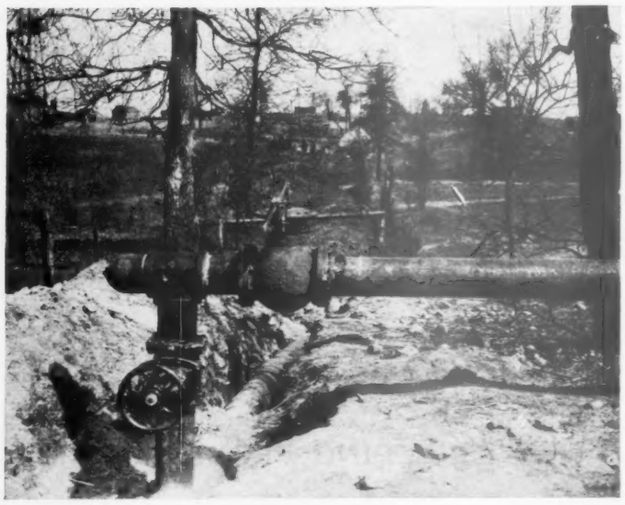

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lines in the various sands and as they are affected by the position of the property with reference to the main axis of the structure.

In conclusion, it may be stated that the foregoing principles as explained and applied should not be considered as hypothetical, for such is not the case. Their serious consideration and practical application in the development of this district will be found to result in material economic benefit.

CENTRAL WEST FIELDS

(Continued from Page 60)

feet 10-inch was set; a string of 980 feet of 8-inch and a string of 6-inch at 1,650 feet. This well is close to the Indiana line and a short distance southeast of Marshall and located not far from what is considered likely oil territory.

To Drill Wildcat

Reports from Mount Vernon, Ill., are that more than 10,000 acres have been taken under lease on Jefferson County land, lying in the vicinity of Ina, Bonnie and Spring Garden in the southern and southeastern parts of the county, south of Mount Vernon. These leases have been taken up by oil interests which have reason to believe, they say, that Jefferson County will offer a fruitful field for operations. The bulk of the leases are in Spring Garden Township, area and adjacent territory. The first location to be staked out was in the NE NW NE, Section 16-4-3, Jefferson County, and known as List No. 1 Spring Garden. An 84-foot derrick, with 10, 12 and 16-inch casing, tools and equipment will be removed from Sandoval to the location of the test, and will be watched with much interest. A total of 119 leases have been filed for record in the county by Edward R. List, well known in Illinois, Indiana, Ohio, Kentucky and Tennessee fields. The leases cover not only oil and gas but minerals as well. The test will be to the southeast from the Sandoval and Centralia Fields of Marion County, where some good production was found some years ago and still producing.

In Bridgeport Township, Lawrence County, the Ohio Oil Co. abandoned old No. 2 well of the Robert Middaugh farm, Section 32.

Central Ohio

Eight completions were reported from the Central Ohio Field and a number of new wells started drilling and a few new locations staked out. The storm hit this area but not so heavy as in the northwestern part of the State.

In Knox County, Brown Township, the Ohio Fuel Gas Co.'s second test, 600 feet from the east line of the George R. and Anna M. Shirs farm, Lot 4, and 500 feet south of the highway, developed into a small gas well.

Ashland County is showing more new work than any of the other counties. In Orange Township, the Ohio Fuel Gas Co. brought in a very fair gas well in a test 745 feet from the north line and 660 feet from the east line of the C. C. Rickett 100 acres, Section 14. The Logan Gas Co. is drilling a test 1,320 feet from the south line and 354 feet from the west line of the Sava Baba 40 acres, Section 7. In Greene Township, the same company is drilling a test 660 feet from the south line and 600 feet from the west line of the Joseph Peters 160 acres, Section 26, and No. 6 well, 660 feet from the south line and 600 feet from the west line of the P. C. Cowan 30 acres, Section 20. In Clear Creek Township, Brown, Shriver and others' test on the R. P. Henderson 10 acres, Section 12, developed into a dry hole as did the Logan Gas Co.'s test, 660 feet from the south line and 1,020 feet from the east line of the G. R. Motter 101 acres, Lot 3, Troy Township, same county.

In Medina County, Montville Township, the Ohio Fuel Gas Co. is drilling a test 1,100 feet from the south line and 660 feet from the west line of the Herman Munson 65 acres, Lot 49. In Lafayette Township, the Logan Gas Co. is drilling a test 900 feet from the north and east lines of the Ira A. Kueiger 81 acres, Section 7, and drilling a test 850 feet from the south line and 1,250 feet from the east line of the W. F. Shafer 100 acres, Section 11, Liverpool Township. In the same township, the Ohio Fuel Gas Co. made a location for a test on the Henry Foecking 69 acres, Section 10.

In Lorain County, Wellington Township, Hulse & Kundtz made a location for a wildcat venture in the southeast corner of the N. Miller 76½ acres, Lot 31. In Huntington Township, Rogers & Rogers are drilling a wildcat well 700 feet from the south line and 2,000 feet from the west line of the Conrad Naegel 75 acres, Lot 15. Ohio Fuel Gas Co. is drilling a test 730 feet from the south line and 1,335 feet from the east line of the Kazmer Kasperski 84 acres, Lot 9.

The Logan Gas Co. has started a test 660 feet from the north and west lines of the A. B. Garn 40 acres, Section 7, Congress Township, Wayne County.

In Holmes County, Monroe Township, the Empire Gas & Fuel Co.'s second well, near the northwest corner of the M. G. Bird 100 acres, Lot 10, is a dry hole. In Salt Creek Township, same company is drilling No. 1 well, 660 feet from the south and east lines of the Jacob S. Miller 107 acres, in Section 35. In Richland Township, the Logan company is starting a test on the Malissa Manchester 40 acres.

A light Berea sand gas well was drilled by Cassingham & Bell Brothers in No. 23 on the Cassingham farm, Lot 2, Newcastle Township, Coshocton County. Logan Gas Co. made a location for a second test on the James A. Markley 50 acres, Lot 1, Monroe Township, same county. Same company is drilling No. 1 on the R. E. Vanwinkle 76 acres, in Lot 14, Perry Township, same county, and made a location for a test in the northwest corner of the Elmer and Emma Clark 152 acres, same section.

In Dover Township, Cuyahoga County, in the Cleveland Field, Foster and Foster landed an average gas well in their No. 3 on the J. B. Harrison 30 acres, Lot 7.

In Addison Township, Gallia County, the Ohio Fuel Gas Co. found a light gas well at a test on the Albert Roush farm, Section 10.

NEW ORLEANS PROPOSED HOST TO GEOLOGISTS

SHREVEPORT, La., Apr. 7.—Shreveport and south Louisiana geologists will seek to prevail on the executive committee of the American Association of Petroleum Geologists to select New Orleans as the meeting place for the 1929 convention, adding their persuasive powers to those exerted at the recent meeting in Los Angeles by a representative of the New Orleans Association of Commerce. The 1923 meeting of the Association was held in Shreveport since when conventions have been held in all the other oil districts of the country and the geologists feel that it is again Louisiana's turn to entertain. Centrally located with respect to accessibility from eastern and Pacific Coast fields and close to the Mid-Continent areas. New Orleans has charms and attractions the Shreveport society feels will be hard to resist and is hopeful of favorable action by the committee on that city's bid.

OIL COMPANY BUILDING

SAN ANGELO, Tex., Apr. 7.—Taylor-Link Oil Co. has taken an option on a downtown business property here as a proposed site for a 12-story building. James L. Taylor, president of the oil company, announced the option would expire April 25.

BUILDING PUMP STATION

SNYDER, Tex., Apr. 7.—The Shell Pipe Line Corp. has started clearing a site 3 miles south of Hermleigh for the erection of a pump station on its line from McCamey to Healdton, Okla. The station will be powered by motors.

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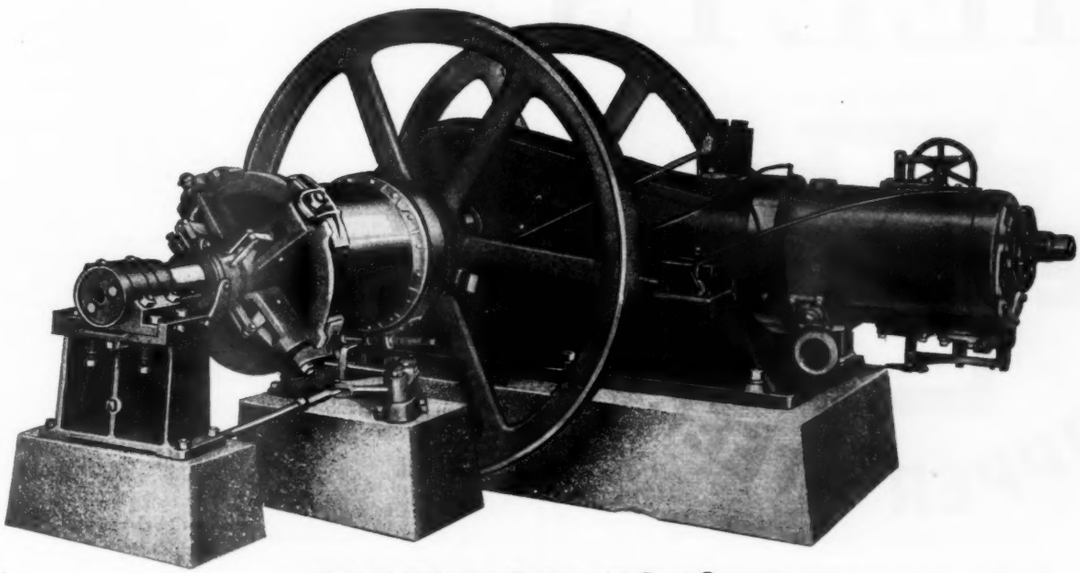

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WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 39)

R. B. Coyle's No. 1 H. M. Halff, C Lot 18, Sec. 70, Blk. 1, I.&G.N. Sur. ..... Drlg. 640 ft.
Dixie Oil Co.'s No. 1 George Thompson, Sec. 72, Blk. 1.... Location.
J. S. Cosden, Inc., No. 1 Paul Perner, SW cor. Sec. 36, Blk. 2, I.&G.N. Sur. ..... Drlg. 1,985 ft.
Henshaw and McMan Oil & Gas Co.'s No. 1 W. Owens, C NW Sec. 17, Blk. G.G., G.C.&S.F.R.R. Sur..... Top salt 1,140 ft; top lime 2,060 ft; drlg. 2,215 ft.
Humble O. & R. Co.'s No. 2 P. J. Sorg Est..... Total depth 2,690 ft.; top pay 2,591 ft., lime; swab, 400 bbls. 18 hrs.; shut down for storage.
Van McPhail's No. 1 George Thompson, C 10-acre tract No. 21, Sec. 70, Blk. 1..... Location.
Van McPhail et al's No. 1 George Thompson, C 10-acre tract No. 22, Sec. 70, Blk. 1..... Location.
Grayburg Oil Co.'s (formerly Osage Oil Co.'s) No. 3 Thompson-Collins, Sec. 70, Blk. 1, I.&G.N. Sur. ..... Drlg. 670 ft.
Grayburg Oil Co.'s No. 1 Thompson-Collins, Sec. 70, Blk. 1, I.&G.N. Sur. ..... Location.
Grayburg Oil Co.'s No. 2 Thompson-Collins, Sec. 70, Blk. 1, I.&G.N. Sur. ..... Location.
W. W. Donnelly & Young's No. 1 Massey, Sec. 29, Blk. U-V ..... Shut down 600 ft.
W. R. Simmons' No. 1 University, 150 ft. N of C S line SE Sec. 1, Blk 14..... Shut down 200 ft.
Whonlick's No. 1 E. M. Halff, 150 ft. N of S l ne and 200 ft. E of Pecos River, Sec. 69, Blk. 1, I.&G.N. Sur. ..... Drlg. 245 ft.
World Oil Co.'s No. 1 Schneeman-B, Sec. 50, Blk. BB, G.C.&S.F. Sur. ..... Top salt 1,070 ft.; hole full salt water 2,210-15 ft.; set 6-in. 2,540 ft.; drlg. 2,830 ft.; hole full sulphur water; shut down 2,910 ft.
M. B. Wyrick et al's No. 1 H. M. Halff, Sec. 68, Blk. 1, H.&G.N. Sur. ..... Drlg. 1,190 ft.
Zoch's No. 1 University, SW cor. Sec. 16, Blk. 14..... Location.
Young & Donnelly's No. 1 J. M. Shannon, C Sec. 11, Blk. 9, D.&S.E. Sur..... 7,000,000 ft. gas at 1,662 ft.; shut down 1,775 ft.
Young & Donnelly's No. 2 J. M. Shannon, Sec. 18, Blk. 10, G.C.&S.F.R.R. Sur. ..... Spudded and shut down.
Young & Donnell's No. 1 J. S. Todd, Sec. 26, Blk. WX, G.C.&S.F. Sur. ..... Location.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 2 Kloh-Rumsey, Sec. 21, Blk. 29, T.&P. Sur., T-1 (NE of No. 1)..... Shut down 1,558 ft.
Hicks & Silver's No. 1 C. O. Finley..... Setting 8-in. casing 868 ft.
Scott & Dittman's No. 1 Miller, SW cor. NW NE Sec. 1, School Blk. 97 ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; shut down for casing 1,767 ft.

ECTOR COUNTY

Pennsylvania Drlg. Co.'s No. 1 W. E. Connell, C NE Sec. 7, Blk. B-16..... Location.
The Texas Company's No. 6 Cosden-Connell, NW cor. NW Sec. 10, Blk. B-16, PSL ..... Location.

EL PASO COUNTY

Ellsworth & Haunt's No. 1 McKinney & Jones..... Rig.

FISHER COUNTY

R. W. Raney's No. 2 Maberry, Sec. 56, Blk. 1, T.&P. Sur. ..... Shut down 3,160 ft.
Sinclair O l & Gas Co.'s No. 1 F. Steele, NW NE NE Sec. 72, Blk. 1, H.&T.C.R.R. Sur..... Drlg. 1,400 ft.

FOARD COUNTY

Marland Oil Co.'s No. 1 J. H. Minnick, C NE Sec. 74, Blk. B, H.&T.C. Sur..... Drlg. 910 ft.

GARZA COUNTY

Marland Oil Co.'s No. 1 B. F. Pippin, C NW Sec. 1,210, W. C. Young Sur. (3,750-ft. test)..... Top salt 960 ft; fishing for pipe 1,680 ft.

GLASSCOCK COUNTY

Texon & Marland's No. 1 Settles..... Set 10-in. 1,420 ft.; top lime 2,015 ft.; hole full sulphur water 2,710-50 ft.; 5-in. casing 3,210 ft.; shut down 3,504 ft. to plug back.
Josey & Finchbaugh's No. 1 S. R. Cox, 1,320 ft. W. of NE cor. and located on the N line of Sec. 29, Blk. 33, Twp. 4s, T.R.R.R. Sur. ..... Location.
Meriwether Oil Co.'s No. 1 L. S. McDowell, CNL Sec. 34, Blk. 34, T-2-S, T.P.R.R. Sur..... Running casing 1,100 ft.
R. R. Penn's No. 1 Hughes & Johnson..... Location.
World Oil Co.'s No. 2 L. S. McDowell, SW SE SW Sec. 32, Blk. 34, T-2-S ..... Location.

HOWARD COUNTY

F. H. E. Oil Co.'s No. 1 Dora Roberts, SW NE Sec. 136, Blk. 29, W.&N.W.R.R. Sur..... Shut down 1,940 ft.
F. H. E. Oil Co.'s No. 3 Dora Roberts-D, SE cor. S. half NW Sec. 136, Blk. 29, W.&N.W. Sur..... Setting 8-in. casing 1,610 ft.
F. H. E. Oil Co.'s No. 3 Dora Roberts-A, 1,170 ft. S and 1,210 ft. W NE cor. Sec. 156, Blk. 29, W.&N.W. Sur.. Top pay 1,862-65 ft; total depth 1,869 ft; shot with 80 quarts 1,865-75 ft; estimated 75 bbls.
F. H. E. Oil Co.'s No. 4 Dora Roberts-A, 1,170 ft. S and 1,710 ft. S and 1,710 ft. W NE cor. Sec. 156, Blk. 29, W.&N.W. Sur..... Shut down 1,320 ft.
Green O. & R. Co.'s No. 1 H. R. Clay, SE cor. Sec. 127, Blk. 29, W.&N.W. Sur..... Shut down for casing, 945 ft.
Henshaw et al's No. 1 W. R. Settles, SW SE SW Sec. 135, Blk. 29 ..... Top pay 2,349-60 ft.; bit in hole; shut down 2,519 ft. for orders.
Lockhart et al's No. 2 Dora Roberts, Sec. 157, Blk 29, W.&N.W. Sur. ..... Material on ground.
Magnolia Pet. Co.'s No. 7 Dora Roberts, SW NE SW Sec. 136, Blk. 29, W.&N.W. Sur..... Drlg. 615 ft.
Marland Oil Co.'s No. 1 Donnelly Clay, Sec. 127, Blk. 29.. Location.
Marland Oil Co.'s No. 1 Richardson, C NW Sec. 12, Blk. 32, T.&P. Sur., T-1-S..... Top salt 370 ft.; hole full salt water 2,235-2,300 ft; hole full sulphur water 2,790-2,800 ft. and 3,010 ft.; pulling pipe to abandon 3,618 ft.
Mays, Nixon & Flowers' No. 1 W. J. Flowers..... Little salt at 976-97 ft.; top salt 1,114 ft.; shut down 2,100 ft.
Merrick & Lamb's No. 4 H. R. Clay, CSL SE NE Sec. 126, Blk. 29, W.&N.W. Sur..... Location.
Miley and Marland Oil Co.'s No. 1 C. D. Read, C NW Sec. 12, Blk. 31, T.&P. Sur., T-1-N ..... Spudded and shut down 5 ft.
Owen & Sloan's No. 4 Dora Roberts, Sec. 136, Blk. 29... Drlg. 1,544 ft.
Pure Oil Co.'s No. 4 Ot's Chalk, Sec. 125, Blk. 29, W. &N.W. Sur. ..... Location.
Sprague Oil Co.'s No. 1 Dora Roberts..... Spudded and shut down.
Sun Oil Co.'s No. 2 W. R. Settles, NW SE SE Sec. 135, Blk. 29 ..... Location.
Sweeney et al's No. 3 Chalk, Sec. 124, Blk. 29..... Location.
Sweeney et al's No. 4 Chalk, Sec. 124, Blk. 29..... Location.
Sweeney et al's No. 6 Chalk, Sec. 124, Blk. 129, W.&N.W. Sur. ..... Location.
Tate-Weekley & Tubbs' No. 4 Dora Roberts, Sec. 156, Blk. 29, W.&N.W.R.R. Sur..... Swabbing and cleaning out 1,890 ft.
Texon O. & L. Co. and Marland Oil Co.'s No. 2 W. R. Settles ..... Top lime 2,030 ft; drlg., 3,494 ft.
Texon and Marland's No. 3 W. R. Settles, C NE Sec. 160, Blk. 29, W.&N.W. Sur ..... Location.
Texon & Marland's No. 2 W. R. Settles-A..... Fishing for bailer 845 ft.
Weekly Oil Corp. et al's No. 1 Dora Roberts, Sec. 156, Blk. 29 ..... Top lime 2,090 ft; drlg. 3,275 ft; two bailers of oil in three hrs.

HUDSPETH COUNTY

American Land Co.'s No. 1 Lockhart and Roseborough, C SE Sec. 5, School Blk. 21..... Shut down 260 ft.
Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, T.&. Sur., T-6..... Setting 10-in. casing 1,707 ft.
Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW Sec. 12, Blk. 18..... Shut down for casing 1,375 ft.

IRION COUNTY

P. F. Hill's No. 1 Horney, 150 ft. S and 450 ft. W of NE cor. SW of Sec. 2, Blk. 3, H.&T.C. Sur. — Drlg. 1,410 ft.
F. E. Webb et al's No. 1 J. M. Nutt. — Fishing 375 ft.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means. — Drlg. 2,625 ft.
Hum le O. & R. Co.'s No. 2 Crecencio Flores, 1,130 ft. N and 850 ft. E of SW cor. Sec. 34, Blk. 58, T.&P. Sur., Twp. 8. — Drlg. 4,415 ft.

JONES COUNTY

Garland & Diamond's No. 1 E. D. Glynn, SE cor. Sec. 18, Deaf & Dumb Asylum Lands. — Hole full water 2,770-80 ft.; shut down 3,145 ft.
Midwest Exploration Co.'s No. 1 Sarah L. Phillips, SW cor. Sec. 16, Blk. 19, T.P.R.R Sur. — Drlg. 2,200 ft.
Rhodes & Highers' No. 1 E. Howell, Sec. 20, Blk. 19, T.&P. Sur. — Top pay 2,520-24 ft.; swabbed 150 bbls. first 24 hrs. and 70 bbls. second 18 hrs.
J. N. Sloan and others' No. 1 W. C. Bennett, NW cor. SW SE Sec. 42, Orphan Asylum Land. — Spudded and shut down.
W. G. Stough and others' No. 1 J. P. Willis, J. C. Patterson Sur., No. 2. — Shut down 1,740 ft.
Teas & Wheeler's No. 1 Henry Sayles, C NE 34 acres, Sec. 3, Blk. 20, T.&C.R.R. — Location.

KENT COUNTY

Marland and Texon's No. 1 Bilby. — Top salt 610 ft; top lime 2,160 ft; drlg 2,960 ft.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore. — Drlg. 2,403 ft.
Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. S and 2,500 ft. W of NE cor. Sec. 31, Blk. 4. — Drlg. 4,140 ft.

LOVING COUNTY

Delaware Oil Co.'s No. 1 Lockhart & Ramsey. — Top salt 780 ft; drlg. 3,170 ft.
Lockhart Bros.' No. 2 fee, 330 ft., 3,630 ft. W SE cor. Sec. 85, Blk. 33, H.&T.C. Sur. — Drlg. 495 ft.
Lockhart & Co.'s No. 1-A Lepp, Sec. 85, Blk. 33. — Total depth 2,260 ft; temp. completed.
Owens & Sloan's No. 1 W. D. Johnson, C SE Sec. 20, Blk. 53, T-2, T.&P. Sur., elev. 2,934. — Top salt 955 ft; total depth 4,785 ft; preparing to plug.

LYNN COUNTY

Elpo Oil Co.'s No. 1 Nevola, NW cor. Sec. 6, Blk. C-42, School Lands. — Drlg. 1,960 ft.
Hart Oil Corp.'s No. 1 C. O. Edwards A-1. — Rig.

MARTIN COUNTY

Phillips Pet. Co.'s No. 1 C. C. Slaughter, SE cor. Sec. 77, Bauer & Cockrell Sur. — Rig.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman, NW cor. SW SW Sec. 22. — 165 ft. 34.6 grav. oil at 411-415 ft.; fishing 415 ft.
J. C. Barnett and T. H. Drake's No. 1 Callan City Co. Ranch, Sec. 22. — Shut down 505 ft.
May & Clark's No. 1 Collen, Sec. 22, B.S.&F. — Shut down 505 ft.
Moody Oil Corp.'s No. 1 G. S. Allison, SE cor. Johann Kuhler Sur. No. 1,473. — Drlg. 720 ft., white lime.
Renfro et al's No. 1 J. Davis. — Shut down 310 ft

MIDLAND COUNTY

Gholson et al's (was Orbit Oil Co.'s) No. 1 Moreland, C SE Sec. 17, Blk. 39, T.&P. Sur., T-1-S. — Top salt 1,910 ft.; shut down 3,510 ft.
Shoup et al's No. 1 Roy Parks. — Fishing 925 ft.

MITCHELL COUNTY

Boehm Drilling Co.'s No. 1 Harry Hyman, C NW SE Sec. 90, Blk. 29, W.&N.W. Sur. — Shut down 505 ft.
California Oil Co.'s No. 8 C. M. Adams Lease No. 2, CSL NE NW Sec. 11, Blk. 28, Twp. 1n, T.&P.R.R. Sur. — Top lime 1,528 ft; drlg. 2,145 ft.
Magnolia Oil Co.'s No. 5 Foster, Sec. 17, Blk. 29, T.&P. — Top lime 1,738 ft; fishing for tools 2,350 ft.
Robert Thraves' No. 1 C. Way, Sec. 91, Blk. 27, T.&P. Sur., T-1-N. — Total depth 2,503 ft.; shut down.

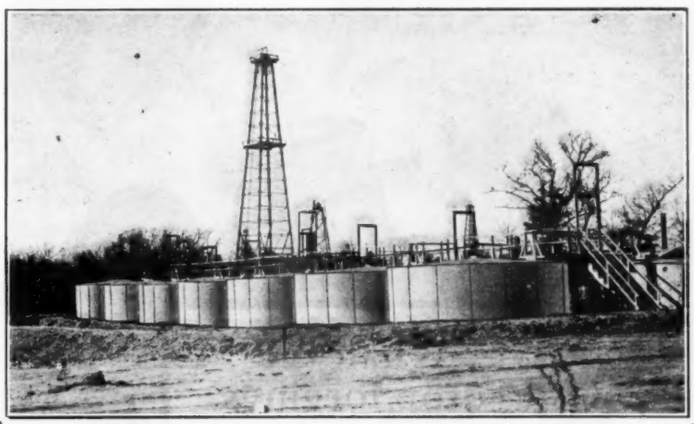
PECOS COUNTY

George Anderson's No. 1 University, C Sec. 11, Blk. 17. — Fishing 510 ft.
Alexander & Lyle's No. 1 Myrtle Sellman, C SW SE Sec. 20, Blk. Z, T.C.Ry. Sur. — Location.
Benedum & Trees' No. 1 B. T. Corder. — Shut down 494 ft.
Bob Elmore's No. 2 Holmes, SE cor. Sec. 45, Blk. 1, I.&G.N. Sur. — Top salt 435 ft.; shut down 990 ft.
Buell & Hagan's No. 1 Pryor & Wilson, Sec. 15, Blk. 5. — Top salt 1,445 ft; shut down 2,508 ft.
Diamond Pet. Co.'s No. 1 Blackstone & Slaughter. — Moving in machine.
M. C. Dibble & Hale's No. 1 Bonebrake, Sec. 115, Blk. 8, H.&G.W. Sur. elev. 2,555 ft. — Shut down 1,170 ft.
Ditto Oil Co.'s No. 1 J. M. Montgomery, Sec. 104, Blk. 231, A-6,387. — Spudded and shut down.
Douglas Oil Co.'s No. 2 Myrtle Sellman, Sec. 14, Blk. Z, T.C.R.R. Sur. — Hole full salt water 795-860 ft.; 25 ft. sulphur water 1,614-15 ft.
Furman Oil Co.'s No. 1 T. W. McNear, Jr., Sec. 46, Blk. 9. — Moving in material.
Everett et al's No. 1 J. Fields. — Spudded and shut down.
Kershaw & Livingston's No. 1 Cannon, Sec. 54, Blk. A-2. — Shut down 2,571 ft.
Kirby Pet. Co.'s No. 1 University, NE cor. Sec. 36, Blk. 24, University Land. — Drlg. 1,140 ft.
Mid-Kansas O. & G. Co.'s No. 1 Pryor & Wilson, NW cor. Sec. 3, Blk. 5, T.C.R.R. Sur. — Top salt 1,455 ft; drlg. 1,575 ft.
Phillips Pet. Co.'s No. 1 Nutt, SE cor. Sec. 8, Blk. 125. — Shut down 50 ft.
R. J. Spikes' No. 1 George Brown. — Shut down 700 ft.
Rowan & Tong's No. 1 Scharff & Blackman, Sec. 4, Blk. 9. — Drlg. 1,800 ft.
Roxana Pet. Corp. and Kirby Pet. Co.'s No. 1 University, Sec. 23, Blk. 26. — Rigging up.
Southern C. O. P. Co.'s No. 1 Scharbauer Cattle Co., SW cor. Sec. 91, Blk. 124, T.&S.P. Sur. — Rigging up.
Stidham & Thrasher's No. 1 Belgrade Ranch Co., Sur. 3, Mrs. S. Tompkins A-4,695. — Flowing sulphur water; shut down 2,020 ft.
Transcontinental Oil Co.'s No. 1 University, NE NW SW Sec. 18, Blk. 18. — Top lime 1,155 ft; drlg. 1,315 ft.
Vacuum Oil Co.'s No. 1 Elsinore Cattle Co., Sec. 60, Blk. D, G.C.&S.F. Sur. — Shut down 2,155 ft.
World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 45, Twp. 8, T.P.R.R. Sur., elev. 2,810 ft. — Drlg. 1,103 ft.
World Oil Co.'s No. 1 Serf, C NE Sec. 10, Blk. 130, T.&St.L. Sur., elev. 3,435 ft. — Drlg. 2,370 ft.

Yates Pool, Pecos County

Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 6 River Bed. — Rig.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 8 River Bed. — Hole full of fluid, 35 per cent water; shut down 1,095 ft.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 9 River Bed. — Location.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 13 River Bed. — Location.
Pandem Oil and Gibson Oil Co.'s No. 14 River Bed. — Location.
Pandem Oil and Gibson Oil Co.'s No. 15 River Bed. — Location.
California Co.'s No. 2 Yates, Sec. 34, Blk. 194 — Rig.
California Co.'s No. 15 I. G. Yates, Lease 1, Sec. 34, Blk. 194 — Shut down 1,109 ft.; 50,000,000 ft. gas from 1,085-1,109 ft.; top pay 1,109 ft.; flowing 400 bbls. per hr.
California Oil Co.'s No. 16 I. G. Yates, Lease 1, Sec. 34, Blk. 194 — Shut down 1,150 ft.
California Co.'s No. 2 M. A. Smith, Lease 1, Sec. 37, Blk. 194, G.C.&S.F. — Drlg. 1,578 ft.
California Co.'s No. 1 Mrs. M. A. Smith, Lease 2, Sec. 26, Blk. 194, G.C.&S.F. Sur. — Drlg. 1,467 ft.
California Co.'s No. 12 Smith, Lease 3. — Drlg. 1,275 ft.
Rumble O. & R. Co.'s No. 7 M. A. Smith, SW cor. NW Sec. 36, Blk. 194. — Fishing 1,225 ft. (cor. depth).
Matador Oil Co.'s No. 1 Smith, NW cor. SE NE Sec. 24, Blk. 194, G.C.&S.F. Sur. — Cellar.
McDonald et al's No. 1 A. A. Parsell, C NW SE Sec. 28, Blk. A, G.C.&S.F.R.R. Sur. — Shut down 100 ft.
McMan and Mariand's No. 16 Yates, Sec. 34½, Blk. 194, G.C.&S.F. Sur. — Drlg. 315 ft.
McMan Oil Co.'s No. 1 Mrs. M. A. Smith, SW cor. Sec. 104, Blk. 194. — Fishing 535 ft.

KEYSTONE COPPER STEEL



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BETHLEHEM
DROP FORGINGS

McMann Oil Co.'s No. 2 Mrs. M. A. Smith, Sec. 104, Blk. 194 ..... Location.
Mariand Oil Co.'s No. 11 Yates-A ..... Location.
Mariand Oil Co.'s No. 12 Yates-A ..... Location.
Mariand Oil Co.'s No. 13 Yates-A ..... Location.
Michaelson & Tabot's No. 1 River Bed ..... Top salt 430 ft; drlg. 1,700 ft.
Mid-Kansas and Trancontinental's No. 17 I. G. Yates-A, Sec. 31, Blk. 194 ..... Drlg. 880 ft.
Mid-Kansas and Transcontinental's No. 18 Yates-A, Lease A-8,195 ..... Location.
Mid-Kansas and Transcontinental's No. 18 Yates-B ..... Show oil 1,095 ft.; flowed sulphur water 1,108 ft.; plugged back to 1,087 ft.; 400 ft. water; 300 ft. oil in hole.
Mid-Kansas and Transcontinental's No. 1 I. G. Yates-G, Sec. 34½, Blk. 194 ..... Setting 8-in. casing 1,075 ft.
Mid-Kansas and Transcontinental's No. 9 Smith-Taylor ..... Drlg. 890 ft.
Oregon Oil Corp.'s No. 1 Yates ..... Shut down 1,430 ft.; 350 ft. oil at 1,369 ft.; 1,000 ft. sulphur water 1,428-30 ft.

Red Bank Oil Co.'s No. 3 Mrs. M. A. Smith, Sec. 24, Blk. 194, G.C.&S.F. Sur. ..... Location.
T. G. Shaw's No. 1 Yates, Sec. 58, Blk. 1, I.&G.N. Sur. ..... Location.

PRESIDIO COUNTY

Headlock & Miller's No. 1 Tootle Est., Sec. 123, Blk. 3, D.&P. Sur., elev. 2,912 ft. ..... Salt water 2,610 ft.; total depth 3,003 ft.; shut down for orders.
Pinto Canyon Oil Co.'s No. 1 Fields, 1,760 ft. S and E NW cor. Sec. 74, Blk. 2, D.&P. Sur. ..... Location.

REAGAN COUNTY

California Oil Co.'s No. 4 University, NW cor. Sec. 3, Blk. 7 ..... Top salt 1,340 ft; fishing 2,830 ft.
Hagan & Emch's No. 1 E. W. Loftin, C E half Sec. 1,271, D.&S.E. Sur. ..... Top salt 1,065 ft; cleaning out 2,763 ft.
Mariand Oil Co.'s No. 1 University, SE cor. SW Sec. 26, Blk. 8 ..... Top salt 1,360 ft; drlg. 2,575 ft.
Moody Oil Co.'s No. 1 R. A. Walters ..... Rig.
Roxana Pet. Corp.'s No. 1 University, NW cor. Sec. 30, Blk. 11, University Lands ..... Location.
Skelly Oil Co.'s No. 2 University, SE SW SE Sec. 35, Blk. 8 ..... Drlg. 765 ft.
Texon O. & L. Co.'s No. 1-B University, Group 1 ..... Top pay 6,250 ft.; 2,000 ft. oil, drlg. 8,000 ft.
White et al's No. 1 Shofner & Sterling, NE cor. NW Sec. 10, 2 m. N of Big Lake ..... Top salt 1,275 ft.; hole full fresh water 2,155 ft.; slight show oil 2,580 ft.; shut down 2,780 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,030 ft.
Grisham-Hunter Corp.'s No. 1 Rather & Connor, 600 ft. from N line and 5,760 ft. from W line of Sec. 26, Blk. 2, H.&G.N. Sur. ..... Top salt 1,037 ft; drlg. 2,200 ft.
David R. Thompson's No. 1 A. A. Eddins ..... Drlg. 5,280 ft.
Vacuum Oil Co.'s No. 1 Grisham-Hunter ..... Drlg. 3,178 ft.

RUNNELS COUNTY

Agnew & Schields' No. 1 R. R. Russell, in Mrs. H. Hollier Sur. ..... Location.
Gibson & Johnson's No. 1 Harris Est., Juliana Voske Cabrera Sur. ..... Moving in rig.
Gibson & Johnson's No. 1 H. P. Serratt, C SE NW Sec. 150, E.T.R.R. Sur. ..... Cleaning out 2,347 ft.
Globe Oil Co.'s No. 1 J. H. Webb ..... Shut down 2,510 ft.
Jones Oil Syndicate's No. 1 W. Hale ..... Drlg. 2,210 ft.
McLean et al's No. 1 G. W. Clayton ..... Shut down 1,050 ft.
Mariand Oil Co.'s and E. L. Smith Oil Co.'s No. 1 A. C. Herring, C Sec. 121, E.T.R.R. Sur. (3,000-ft. test) ..... Drlg. 150 ft.
Mariand Oil Co.'s No. 1 R. R. Russell, near CSL J.F.G. Sur. ..... Drlg. 1,400 ft.
Kennedy et al's No. 1 J. E. Tally ..... Drlg. 2,250 ft.
May et al's No. 1 J. M. Schneider, John Wall Sur. ..... ½ baller salt water 1,033 ft.; hole full water 1,100-20 ft; shut down 1,675 ft.

Miles Oil Co.'s No. 1 Charles Ray, Sec. 21, T.&N.O. Sur. ..... Cellar and machine.
Miles Oil Co.'s No. 1 L. S. Lawhon, NE cor. Sec. 68 ..... Show gas 960-80 ft; shut down 2,450 ft.
Royal Pet. Co.'s No. 1 A. C. Willingham ..... Preparing to run 10-in. 1,410 ft.
Sillix Pet. Co.'s No. 1 Malone ..... Location.
R. B. Summers et al's No. 1 J. W. Reese, M. J. Parramore Sur. No. 26 ..... Shut down 750 ft.
Swensondale Oil Co.'s No. 1 E. A. Werner ..... Drlg. 2,650 ft.
Vacuum Oil Co., Lou Ladd et al's No. 1 J. S. Flanagan, NW cor. Subdivision No. 29, Domingo Diaz Sur. No. 532 ..... Rig.
Vacuum Oil Co. et al's No. 1 H. R. Fowler, subdivision No. 23, Domingo Diaz Sur. No. 532 ..... Drlg. 1,355 ft.
Watchorn O. & G. Co.'s No. 1 J. L. King ..... Underreaming 2,435 ft.

SCHLEICHER COUNTY

Beavers & Leath et al's No. 1 J. A. and W. T. Whitten, C NW Sec. 35, Blk. 11, T.O. Sur. ..... Shut down 400 ft.

SCURRY COUNTY

J. B. Mims et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ..... Rig.

STERLING COUNTY

Orr et al's (to be taken over by Empire G. & F. Co.) No. 1 Neal Reed, CNL Sec. 15, Blk. 30, W.&N.W. Sur. ..... Shut down 1,380 ft. (cor.).

STONEWALL COUNTY

Henshaw Oil Corp.'s No. 1 W. P. Moore, Sec. 136, Blk. 1, E.&T.C. Sur. ..... Rig.

SUTTON COUNTY

J. D. Nantz et al's No. 1 G. Allison, C NE Sec. 29, Blk. R, H.E.&W.T.R.R. Sur. ..... Shut down 100 ft.
National Potash Co.'s No. 1 J. N. Ross ..... Coring shale 1,300 ft.

TAYLOR COUNTY

A. J. Brown et al's No. 1 Hensley, NE cor. Sec. 5, Blk. 4, S.P.R.R. Sur. ..... Shut down 2,935 ft.
Dorning & Perrine's No. 1 J. A. Hammer, C N 100 acres, Sec. 23, Blk. 19, T.&P. Sur., elev. 1,804 ft. ..... Shut down 455 ft.
Gilbert Johnson and Day Bros.' No. 1 C. M. Brown, Sec. 1, Blk. 6, T.&P. Sur. ..... Hole full water 2,170-2,220 ft.; cased off; shut down 2,003 ft., contract depth.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett ..... Location.
Champlin Ref. Co.'s No. 1 Corder, C Sec. 110, Blk. 1, C.C.S.D. Sur. ..... Drlg. 2,230 ft.
Deep Rock Oil Co.'s No. 1 H. C. Nolke, Sec. 4, Blk. A-2, T.C.R.R. Sur. ..... Drlg. 1,985 ft.
Humble Oil Co.'s No. 1 University, Sec. 15, Blk. 34 ..... Fishing 2,200 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Blk. D-7, E.L.&R.R. Sur. ..... Rig.
Milham Exploration Co.'s No. 1 Bassett, Sec. 77, Blk. Y, W. H. Robertson Sur. ..... Fishing 2,409 ft.
Bryan and Breen's No. 1 Allison & Burke, C NW Sec. 10, Blk. 176, Texas-Mex.R.R. Sur. ..... Rig.
Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.R.G.&N.G.R.R. Sur. ..... Rig.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownfield, C NW SW SW Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Shut down 4,008 ft., contract depth.

TOM GREEN COUNTY

George Amery's No. 1 Wilkey, C SW Sec. 3, B.A.L. Sur. ..... Location.
Collins et al's No. 1 Jones, CSL Sec. 646, Shaffer Sur. ..... Rig.
Cox et al's No. 1 Llano ..... Drlg. 776 ft.
Fitzgerald & Taliaferro's No. 1 Bennett ..... Shut down 1,955 ft.
Lone Eagle Oil Co.'s No. 1 Sharp, SE W Elsel Sur. No. 167 ..... Spudded and shut down.
Mariand Oil Co.'s No. 1 J. W. Johnson-A ..... Shut down 3,355 ft.
Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S.D.R.R. Sur. ..... Shut down 1,020 ft.
Haulett et al's No. 1 Johnson ..... Shut down 1,205 ft.
World Oil Co.'s No. 1 Mrs. F. T. March ..... Location.

UPTON COUNTY

Cowboy Evans and Wilburn's No. 1 University, Sec. 10, Blk. 15, University Lands ..... Drlg. 920 ft.

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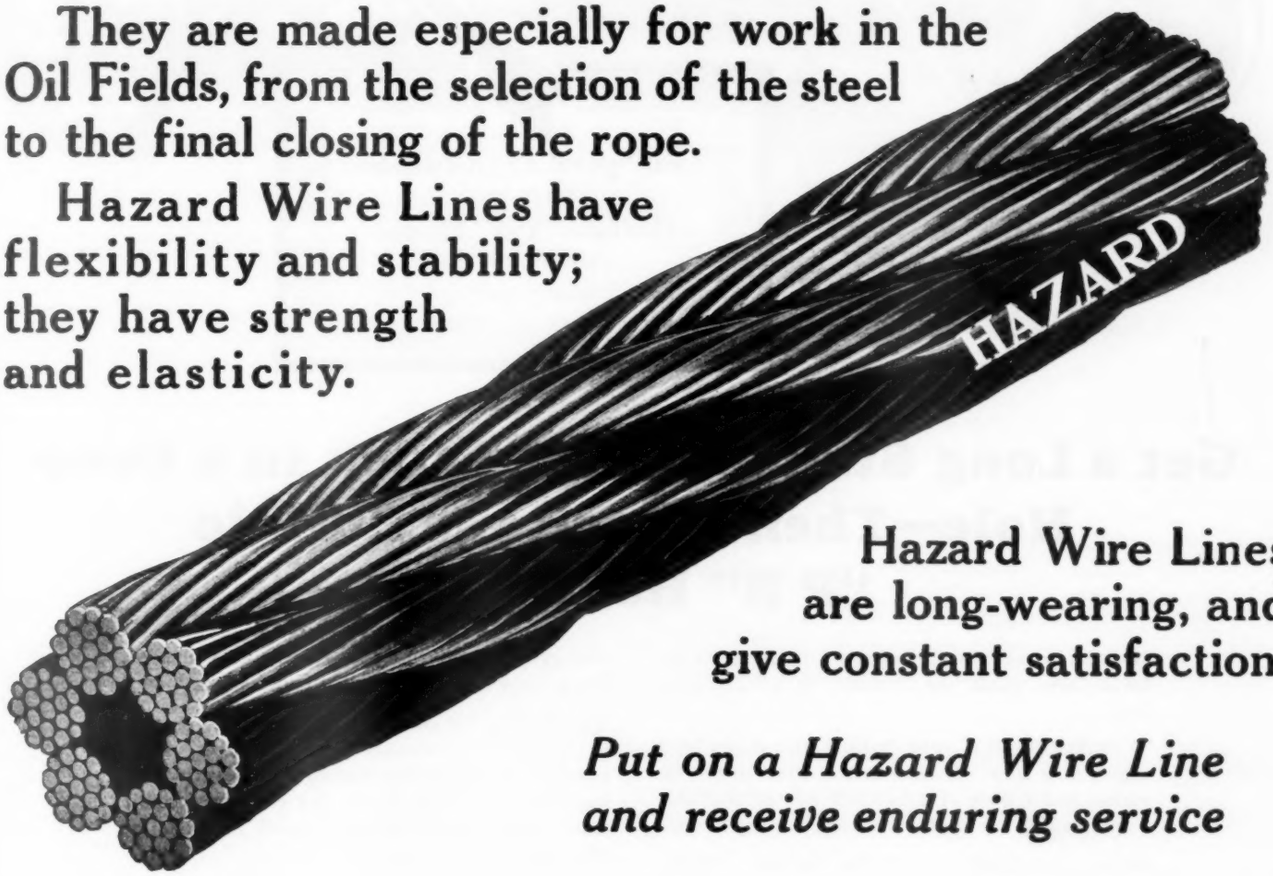

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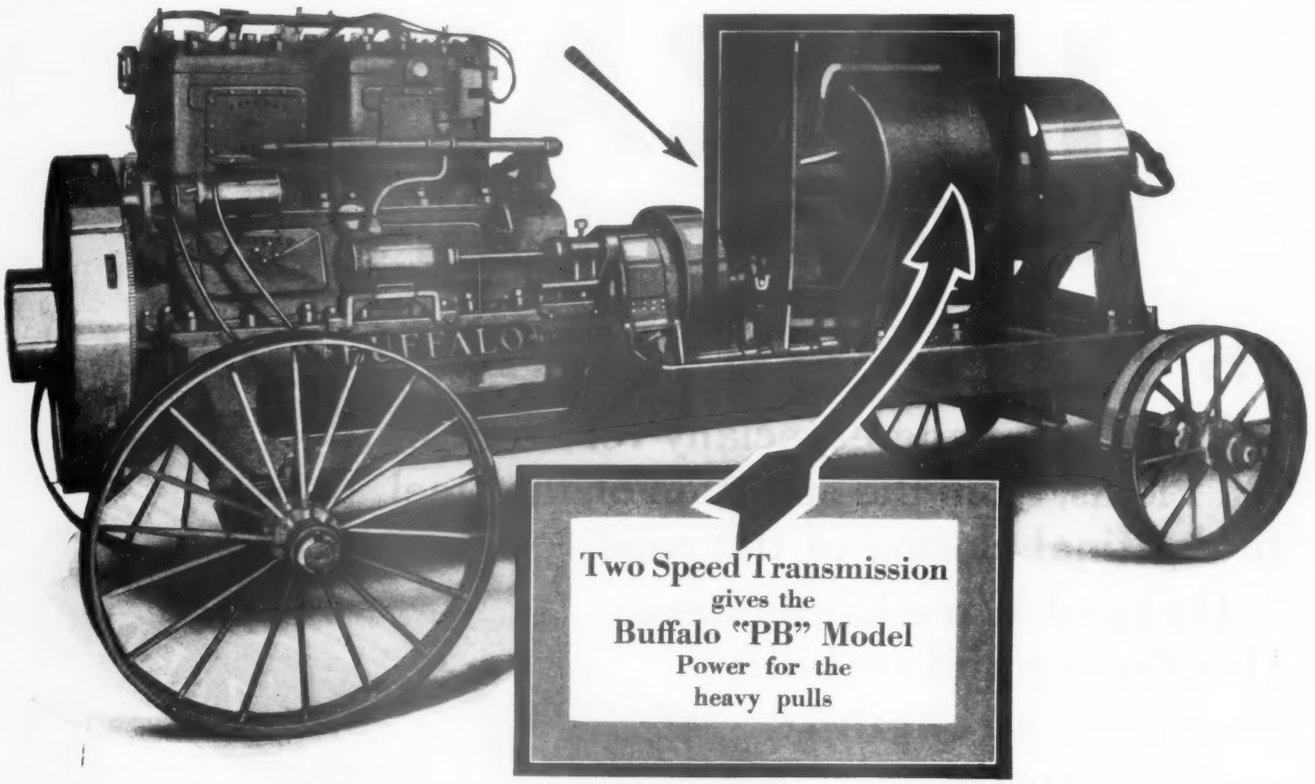

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Clutch strains are reduced to a minimum. The belt pulley is supported by a heavy cast steel frame so that the engine cannot be pulled out of alignment by using a tight belt. There is just one belt to the band wheel—12 in. or 14 inch.

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Western Distributor
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Midland, Texas
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Louden Tool Co.
Kittanning, Penna.

Mark Curtis et al's (was Hultz et al's) No. 2 Giddings, 5,336 ft. S and 6,678 ft. E of NW cor. Throckmorton C. School Land, League 1, elev. 2,757 ft. — Shut down 975 ft.
Hum le C. & R. Co.'s No. 8 R. Richer, in M. S. Denton Sur. No. A-127 — Location.
Penn and Atlantic's No. 1 Live Stock Exchange, Sec. 34, Blk. 38 — Drlg. 902 ft.
Snowden & McSweeney's No. 2 Ed S. Hughes, Sec. 9, Blk. 3½, C.C.S.D.&R.G.N.G.R.R. Sur. — Total depth 2,347 ft.; swabbing.
The Texas Company and Cordova Union's No. 1 Union Land, Sec. 23, Blk. 35, H.&T.C. — Top pay 2,098 ft.; swabbed 60 bbls. in 36 hrs. at 2,271 ft., 2 per cent water; 2,260 ft. sulphur water 2,390-2,405 ft.; total depth 3,201 ft.; plugged back to 2,350 ft. and lost bailer; fishing.
Wise & Jackson's No. 1 J. H. Porter, SW cor. SW SW Sec. 184, Blk. E, elev. 2,592 ft. — Top pay 3,419 ft.; total depth 3,517 ft., gray lime; shut down.

VAL VERDE COUNTY

A. Blume et al's No. 1 Moore Est., Sec. 183, J. Mitchell Sur., elev. 953 ft. — Shut down 3,000 ft.
Curso Williams' No. 1 Holman, NE NE Sec. 5, Blk. N, G.H.&S.A. Sur. — Shut down 2,940 ft.
East Del Rio O.I Co.'s No. 1 Russell, SE cor. Sec. 183, Del Rio Town Sur., elev. 941 ft. — Shut down 3,320 ft.
Magnolia Pet. Co.'s No. 1 Whitehead, Sec. 81, D.G.C. &S.F. Sur., elev. 1,770 ft. — Shut down 6,540 ft. for band wheel.
Independent Operators' No. 1 Whitehead, SE SE Sec. 39, Blk. 4, I.G.&N. Sur., elev. 1,175 ft. — Shut down 3,900 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,120 ft. — Gas sand 2,491-2,520 ft.; tested 125,750 ft. gas; reset 8-in. 2,511 ft.; shut down 4,210 ft.
W. B. Thraves et al's No. 1 W. E. Wilson — Shut down 930 ft.

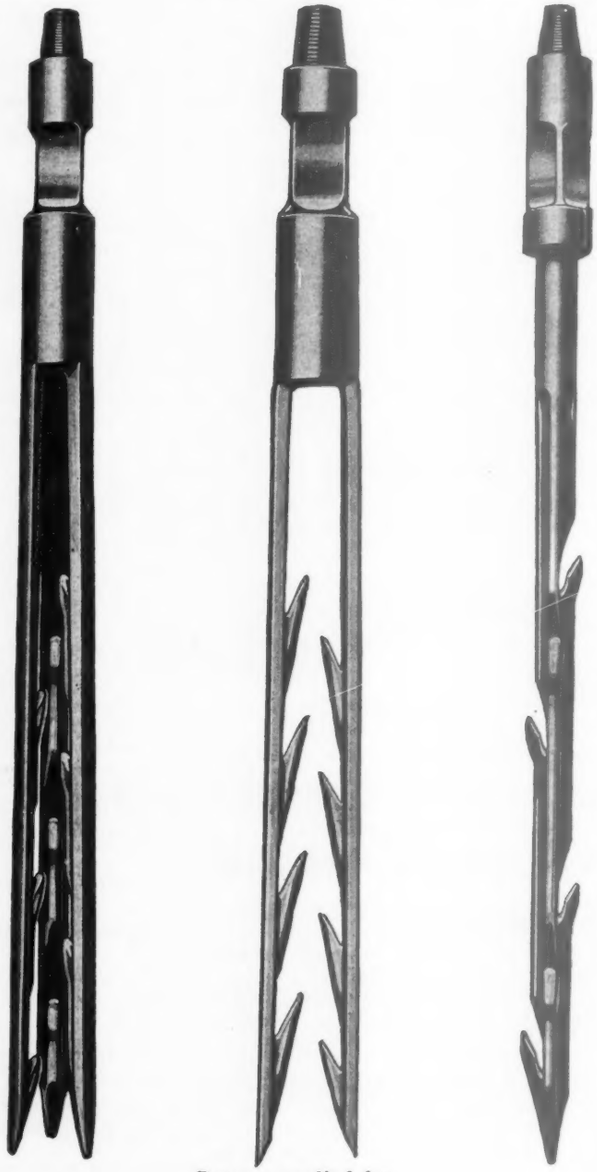
WARD COUNTY

Alfredo Del Cambre's No. 1 Lee Monroe, Sec. 50, Blk. 33, H.&T.C. Sur. — Spudded and shut down.
E. H. Devore et al's No. 1 Black, Sec. 214, Blk. 34, H.&T.C. Sur. — Spudded and shut down.
Estex Oil Co.'s No. 1 W. A. Estes, Sec. 4, Blk. B-29, 3,500-ft. test — Rigging.
Great Basin Oil Co.'s No. 1 M. T. Eudaley, 2,200 ft. from NE line, 1,800 ft. from SE line, Sec. 36, Blk. 4, H.&T.C. Sur. — Drlg. 585 ft.
Selby Oil Co. et al's No. 1 A. G. Dooley et al, Sec. 85, Blk. A, G.M.M.&A. Sur. — Drlg. 1,930 ft.

WINKLER COUNTY

Amerada Pet. Corp.'s No. 1 J. B. Walton, SW cor. NW Sec. 48, Blk. 26, elev. 2,833 ft. — Drlg. 2,480 ft; 40,000,000 ft. gas.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter-A, Sec. 34, Blk. B-5 — Shot 480 qts. 2,850-2,999 ft.; shot 960 qts. 2,800-2,991 ft.; no results; total depth 3,000 ft.; moving in rotary.
Atlantic O. P. Co.'s No. 5 Grisham-Hunter-"A", SW NE SW Sec. 34, Blk. B-5 — Top salt 1,610 ft.; top lime 2,486 ft; drlg. 2,938 ft.
Atlantic O. P. Co.'s No. 6 Grisham-Hunter, NW cor. SE SW Sec. 34, Blk. B-5 — Top salt 1,400 ft.; top lime 2,486 ft; drlg. 2,990 ft.
Atlantic O. P. Co.'s No. 7 Grisham-Hunter-A, NE SE E half, SW Sec. 34, Blk. B-5 — Top lime 2,490 ft; drlg. 2,550 ft.
Atlantic O. P. Co.'s No. 8 Grisham-Hunter-A, SE NE E half SW Sec. 34, Blk. B-5 — Drlg. 2,459 ft.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter-E, NW cor. Sec. 41, Blk. B-5 — New location.
Atlantic O. P. Co.'s No. 3 Grisham-Hunter-"E", CNL N half NE Sec. 41, Blk. B-5 — Location.
Atlantic O. P. Co.'s No. 4 Grisham-Hunter-E, SE NE NE Sec. 41, Blk. B-5 — Top salt 1,274 ft.; top lime 2,315 ft; show oil 2,754-66 ft; drlg. 2,787 ft.
Atlantic O. P. Co.'s and Collett's No. 3 Hendrick-F, NW NE NW Sec. 40, Blk. 46 — Drill stem stuck 1,151 ft; to lubricate.
Atlantic and Collett's No. 4 Hendrick-F, NE NW Sec. 40, Blk. 26 — Drlg. 2,440 ft.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-C (was Lemar) SW cor. Sec. 40, Blk. B-5 — Total depth 2,978 ft.; gas pressure split connections; est. 75,000,000 ft. gas; running wild; trying to kill gas; top salt 1,573 ft.; top lime 2,200 ft.
Atlantic O. P. Co.'s No. 3 Ida Hendricks-D, NW SE NW Sec. 29, Blk. B-5 — Top salt 1,415 ft; Top lime 2,568 ft; gas 2,600 ft; drlg. 2,765 ft.
Atlantic O. P. Co.'s No. 5 Ida Hendricks-D, SW SE S half NW Sec. 29, Blk. B-5 — Top salt 1,543 ft; drlg. 2,585 ft.
Atlantic O. P. Co.'s No. 6 Hendricks-D, SE cor. SW S half NW Sec. 29, B-5 — Fishing 2,600 ft.
Atlantic O. P. Co.'s No. 7 Hendricks-D, NW cor. SW S half NW Sec. 29, Blk. B-5 — Drlg. 2,605 ft.
Atlantic O. P. and Collett's No. 2 Ida Hendricks-F — Top salt 1,984 ft.; top lime 2,458 ft; drlg. 2,675 ft.
Atlantic and Collett's No. 5 Ida Hendricks-F, SE SW NW Sec. 40, Blk. 26 — Location.
Atlantic and Collett's No. 6 Ida Hendricks-F, SW SE NW Sec. 40, Blk. 26 — Location.
V. T. Bolin et al's No. 1 Brown — Top salt 1,302 ft; drlg. 2,200 ft.
Cranfill & Reynolds' No. 1 Hendricks-D, SW NW NW Sec. 33, Blk. 26 — Drlg. 300 ft.
Danciger et al's No. 1 John Sealy, SW cor. NE Sec. 93, Blk. A, G.M.M.B.&A. Sur. — Drlg. 700 ft.
Gibson-Johnson and Kessler & Logan's No. 1 Lack, C SW Sec. 3, Blk. 74 — Top salt 1,980 ft.; shut down 2,701 ft.
Gibson-Johnson's No. 1 Lunn Daugherty, SE NW SW Sec. 3, Blk. 74 — Location.
Gulf Prod. Co.'s No. 2 T. G. Hendricks, NE NW NW Sec. 34, Blk. B-5 — Rig standing.
Gulf Prod. Co.'s No. 8 T. G. Hendricks, Sec. 34, Blk. B-5 — Drlg. 620 ft.
Gulf Prod. Co.'s No. 9 T. G. Hendricks, Sec. 34, Blk. B-5 — Top lime 1,837 ft.; top pay 2,824 ft.; flowing 100 bbls. per day, 50 per cent water; drlg. 2,940 ft.
Gulf Prod. Co.'s No. 11 T. G. Hendricks, Sec. 34, Blk. B-5 — Top salt 1,625 ft.; top lime 2,455 ft; Drlg. 2,822 ft.
Gulf Prod. Co.'s No. 12 T. G. Hendricks, Sec. 34, Blk. B-5 — Top lime 2,342 ft.; top salt 1,410 ft; drlg. 2,680 ft.
Gulf Prod. Co.'s No. 13 T. G. Hendricks, Sec. 40, Blk. B-5 — Top salt 1,340 ft.; top lime 2,244 ft; drlg. 2,945 ft.
Gulf Prod. Co.'s No. 15 T. G. Hendicks, C NW SW NW Sec. 40, Blk. B-5 — Drlg. 2,241 ft.
Gulf Prod. Co.'s No. 16 T. G. Hendricks, NW cor. Sec. 40, Blk. B-5 — Location.
Gulf Prod. Co.'s No. 17 Hendricks, SE cor. NE Sec. 45, Blk. 26 — Location.
Humble O. & R. Co.'s No. 1 Hendricks-C, SE cor. Sec. 32, Blk. 26 — Top salt 2,225 ft; top lime 2,517 ft; drlg. 2,631 ft.
Humble O. & R. Co.'s No. 2 Hendricks-C, SE NE SE Sec. 32, Blk. 26 — Location.
Humble O. & R. Co.'s No. 3 Hendricks-C, SE NE NE Sec. 32, Blk. 26 — Location.
Humble O. & R. Co.'s No. 4 Hendricks-C, SE cor. NE Sec. 32, Blk. 26 — Location.
Humble O. & R. Co.'s No. 1 J. B. Walton-B, SE cor. N half Sec. 47, Blk. 26 — Derrick.
Humble O. & R. Co.'s No. 1 J. B. Walton-A, NW cor. Sec. 48, Blk. 26 — Derrick.
Humble O. & R. Co.'s No. 3 Grisham-Hunter, Sec. 34, Blk. B-5 — Top salt 1,362 ft.; top lime 2,188 ft.; shut down 2,898 ft.; 50,000,000 ft. gas.
Humble O. & R. Co.'s No. 8 Grisham-Hunter — Top salt 1,240 ft.; top lime 2,322 ft; shut down 2,915 ft; ready to bail in.
Humble O. & R. Co.'s No. 9 Grisham-Hunter, NE NE Sec. 34, Blk. B-5 — Top salt 1,310 ft; drlg. 2,074 ft.
Humble O. & R. Co.'s No. 11 Grisham-Hunter, SW cor. W half NW Sec. 41, Blk. B-5 — Drlg. 1,538 ft.
Humble O. & R. Co.'s No. 14 Grisham-Hunter, NE W half NW Sec. 41, Blk. B-5 — Drlg. 52 ft.
Humble O. & R. Co.'s No. 12 Grisham-Hunter, NE SW NE Sec. 34, Blk. B-5 — Top salt 1,689 ft; top lime 2,339 ft; drlg. 2,340 ft.
Humble O. & R. Co.'s No. 13 Grisham-Hunter, NW SE NE Sec. 34, Blk. B-5 — Rigging up rig.
Humble O. & R. Co.'s No. 6 Ida Hendricks-"B", NE NW SE Sec. 29, Blk. B-5 — Top salt 1,345 ft.; top lime 2,516 ft; setting 8-in. casing 2,831 ft.
Humble O. & R. Co.'s No. 7 Ida Hendricks-B, SE NW N half SE Sec. 29, Blk. B-5 — Shut down 210 ft.
Independent O. & G. Co.'s No. 3 Grisham-Hunter, SE NW SW Sec. 34 — Top salt 1,485 ft.; top lime 2,505 ft; drlg. 2,605 ft.
Independent O. & G. Co.'s No. 3 Vardeman-B, SE NE NW Sec. 41, Blk. B-5 — Top salt 1,340 ft.; top lime 2,328 ft; drlg. 2,829 ft.
Independent O. & G. Co.'s No. 5 Vardeman-B, NW SE NW Sec. 41, Blk. B-5 — Top salt 1,570 ft.; top lime 2,395 ft.; drlg. 2,397 ft.
Independent O. & G. Co.'s No. 6 Vardeman-B, NW cor. E half NW Sec. 41, Blk. B-5 — Spudding.
Independent O. & G. Co.'s No. 1 E. W. Cowden, SE NW NW Sec. 36, Blk. B-5 — Gas shut off with 6-in. casing; drlg. 2,730 ft; flowing 85 bbls. by heads.
Liner Dlg. Co.'s No. 1 Seth-Campbell, NE cor. Sec. 2, Blk. B-5 — Shut down 450 ft.
Landreth and Roxana's No. 1 E. W. Cowden-A, NW cor. Sec. 2, Blk. 12 — Location.
Landreth Prod. Co.'s No. 1 T. G. Hendricks-B, NW cor. E half NE Sec. 40, Blk. 26 — Drlg. 870 ft.
Landreth and Roxana's No. 2 Hendricks-B, SE cor. E half NE Sec. 40, Blk. 26 — Location.
Landreth and Roxana's No. 2 Ida Hendricks-A, Sec. 29, Blk. B-5 — Top salt 1,440 ft.; top lime 2,670 ft; total depth 3,068 ft; initial prod. 4,150 bbls.
Landreth and Roxana's No. 5 Ida Hendricks-A, NW NE SW Sec. 29, Blk. B-5 — Top lime 2,655 ft; drlg. 2,665 ft.
Landreth and Roxana's No. 6 Hendricks-A, NE cor. NW SW Sec. 29, Blk. B-5 — Top salt 1,543 ft; drlg. 2,630 ft.
Landreth and Roxana's No. 1 Hendricks-D, NE cor. E half SE Sec. 40, Blk. 26 — Location.
Llano Oil Co.'s No. 1 F. B. Armstong, at common cor. Secs. 12, 13, 18 and 19, Blk. R-6, School Land — Location.
Marland Oil Co.'s No. 1 T. G. Hendricks, SE cor. W half Sec. 23, Blk. 26 — Drlg. 2,100 ft.
Marland Oil Co.'s No. 2 T. G. Hendricks, NE SE SE Sec. 22, Blk. 26 — Cellar.
Marland Oil Co.'s No. 3 T. G. Hendricks, NE SE SW Sec. 33, Blk. 26 — Drlg. 1,090 ft.
Marland Oil Co.'s No. 4 T. G. Hendricks, SW NE SW Sec. 33, Blk. 26 — Location.
Marland Oil Co.'s No. 5 T. G. Hendricks, NW NE SW Sec. 33, Blk. 26 — Location.
Marland Oil Co.'s No. 6 T. G. Hendricks, NE cor. SW Sec. 33, Blk. 26 — Location.
Magnolia Pet. Co.'s (was G. M. Church et al's) No. 2 Ida Hendricks — Show oil 2,750 ft.; top pay 2,865 ft.; total depth 2,961 ft.; ran 5-in. with packer to 2,955 ft.; failed to shut off water; plugging back.
Magnolia Pet. Co.'s No. 5 Ida Hendricks — Top salt 1,624 ft.; top lime 2,509 ft; top pay 2,940 ft; total depth 3,005 ft; underreaming 2,974 ft; no production.
Magnolia Pet. Co.'s No. 6 Ida Hendricks, Sec. 29, Blk. B-5 — Top salt 1,430 ft.; top lime 2,420 ft; top pay 2,750 ft; drlg. 2,887 ft; flowing 550 bbls.
Magnolia Pet. Co.'s No. 7 Ida Hendricks — Top lime 2,448 ft.; top salt 1,365 ft; drlg. 2,955 ft.
Magnolia Pet. Co.'s No. 8 Ida Hendricks — Top salt 1,510 ft.; top lime 2,495 ft; show oil 2,795 ft; drlg. 2,800 ft.
Murchison Oil Co. et al's No. 1 Grisham-Hunter-B, NE cor. SW SW Sec. 35, Blk. B-5 — Top salt 1,335 ft.; shut down 2,427 ft.
Murchison Oil Co. et al's No. 2 Grisham-Hunter-B — Location.
Mining & Engineering Co.'s No. 1 T. G. Hendricks, Sec. 10, Blk. B-12 — Hole full fresh water; shut down 1,232 ft.
Murchison Oil Co. and Cranfill Bros.' No. 2 Grisham-Hunter-A — Location.
Murchison Oil Co. and Cranfill Bros.' No. 4 Grisham-Hunter — Location.
Murchison Oil Co. and Cranfill Bros.' No. 1 Hendricks-H (5-acre tract), Sec. 33, Blk. 26 — Drlg. 647 ft.
Prairie O. & G. Co.'s No. 1 T. G. Hendricks, NW cor. E half SW Sec. 40, Blk. 26 — Location.
Pure Oil Co.'s No. 5 Hendricks — Top salt 1,643 ft.; top lime 2,461 ft; drlg. 2,766 ft; flowing 400 bbls. per hour.
Pure Oil Co.'s No. 5 Hendricks-B, SE SW SE Sec. 34, Blk. B-5 — Top lime 2,420 ft.; top salt 1,412 ft; drlg. 2,752 ft.
Pure Oil Co.'s No. 6 Hendricks-B — Top salt 1,315 ft.; top lime 2,388 ft; drlg. 2,830 ft.
Pure Oil Co.'s No. 7 Hendricks-B, NE SE SE Sec. 34, Blk. B-5 — Top salt 1,212 ft; top lime 2,331 ft; drlg. 2,375 ft.
Pure Oil Co.'s No. 8 Hendricks-B, SE NE SE Sec. 34, Blk. B-5 — Top salt 1,479 ft; setting 8-in. casing 2,295 ft.
Pure Oil Co.'s No. 9 Hendricks-B, NW NE SE Sec. 34, Blk. B-5 — Top salt 1,240 ft; setting 8-in. casing 2,266 ft.
Pure Oil Co.'s No. 10 Hendricks-B, NE NW SE Sec. 34, Blk. B-5 — Setting 8-in. casing 2,311 ft.
Pure Oil Co.'s No. 11 Hendricks-B, SW NW SE Sec. 34, Blk. B-5 — Drlg. 2,399 ft.
Pure Oil Co.'s No. 12 Hendricks-B, NW SW SE Sec. 34, Blk. B-5 — Drlg. 2,424 ft.
Pure Oil Co.'s No. 13 Hendricks-B, NE SW SE Sec. 34, Blk. B-5 — Drlg. 250 ft.
Pure Oil Co.'s No. 14 Hendricks-B, NE SW SE Sec. 34, Blk. B-5 — Moving in material.
Pure Oil Co.'s No. 15 Hendricks-B, SE NW SE Sec. 34, Blk. B-5 — Moving in material.
Pure Oil Co.'s No. 16 Hendricks-B, SW NE SE Sec. 34, Blk. B-5 — Moving in material.
Pure Oil Co.'s No. 1 Gisham-Hunter-C — Location.
Pure Oil Co.'s No. 2 Grisham-Hunter-C, SW cor. SE Sec. 45, Blk. 26 — Location.
Pure Oil Co.'s No. 3 Grisham-Hunter-C, SE cor. Sec. 45, Blk. 26 — Location.
Pure Oil Co.'s No. 4 Grisham-Hunter-C, NE cor. SE Sec. 45, Blk. 26 — Drlg. 2,162 ft.
Pure Oil Co.'s No. 6 Grisham-Hunter, NW SW Sec. 41, Blk. B-5 — Top salt 2,015 ft; drlg. 2,554 ft.
Repu lic Prod. Co.'s No. 1-A, Grisham-Hunter-B, SW co. E half SE Sec. 41, Blk. B-5 — Top salt 1,240 ft.; top lime 2,135 ft.; standardizing 2,390 ft.
Republic Prod. Co.'s No. 3 Grisham-Hunter-B, NE cor. SE Sec. 41, Blk. B-5 — Top salt 1,280 ft; top lime 2,340 ft. (corrected); total depth 2,980 ft; killing gas.
Republic Prod. Co.'s No. 2 Hendricks-A, NE E half SW Sec. 45, Blk. 26 — Top salt 1,240 ft.; top lime 2,135 ft.; fishing 2,302 ft.
Republic Prod. Co.'s No. 1 Hendricks-C, SW NE NE Sec. 42, Blk. B-5 — Shut down 1,965 ft.
Republic Prod. Co.'s No. 2 Ida Hendricks-C, Sec. 42, Blk. B-5 — Setting 12-in. casing 744 ft.
Roxana Pet. Corp.'s No. 4 Hendricks-B, NE cor. SW S half SE Sec. 29, Blk. B-5 — Top salt 1,500 ft; setting 8-in. casing 2,620 ft.

The "TALON" Line



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The Monroe "Talon" Line of Rope Fishing Tools are the most efficient Tools ever produced for the recovery of broken cables.

Grabs have collapsible legs which are real "Talons" for gripping the broken end.

Legs are forged from special nickel alloy steel, with wire line or manila rope wickers interchangeable in same working head.

All sizes from 2" up.

Manufactured by

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"Use the better tool first"

Roxana Pet. Corp.'s No. 5 Ida Hendricks-B, SE cor. SW S half SE Sec. 29, Blk. B-5 — Top salt 1,520 ft; drlg. 1,639 ft.

Roxana Oil Corp.'s No. 6 Hendricks-B, SE cor. Sec. 29, Blk. B-5 — Location.

Roxana Pet. Corp.'s No. 7 Ida Hendricks-C, SE SW N half NW Sec. 29, Blk. B-5 — Top salt 1,326 ft; top lime 2,570 ft; drlg. 2,906 ft; flowing 360 bbls.

Roxana Pet. Corp.'s No. 8 Hendricks-C, SW cor. N half NW Sec. 29, Blk. B-5 — Top salt 1,555 ft; top lime 2,615 ft; setting 8-in. casing 2,626 ft.

Roxana Pet. Corp.'s No. 4 Grisham-Hunter-D, NE cor. S half NE Sec. 41, Blk. B-5 — Top salt 1,230 ft.; top lime 2,266 ft; shut down 2,765 ft; top pay 2,656 ft; flowing 360 bbls.

Roxana Pet. Corp.'s No. 5 Grisham-Hunter-D, SE SW NE Sec. 41, Blk. B-5 — Shut down 600 ft.

Roxana Pet. Corp. No. 6 Grisham-Hunter-D, SW SE NE Sec. 41, Blk. B-5 — Cellar.

Roxana Pet. Corp.'s No. 1 Grisham-Hunter-E — Drlg. 2,445 ft.

Roxana Pet. Corp. and Llano Oil Co.'s No. 2 W. F. Scarborough, SW cor. NE Sec. 1, Blk. C-22, School Land — Top salt 1,120 ft.; top pay 3,135-40 ft; fishing 3,230 ft.

Sheldon & Burden's No. 1 Ida Hendricks, SW cor. SE Sec. 28, Blk. B-5 (10-a. tract) — Top salt 1,260 ft.; top lime 2,609 ft.; top pay 2,719 ft.; total depth 3,243 ft.; shut down.

Skelly Oil Co.'s No. 1 Hendricks, NW cor. W half NE Sec. 40, Blk. 26 — Shut down 1,610 ft.

Southern C. O. P. Co.'s No. 2 T-89 Grisham-Hunter-A, Sec. 35, Blk. B-5 — Top salt 1,139 ft.; drlg. 2,301 ft.

Southern C. O. P. Co.'s No. 3 T-89-A Grisham-Hunter-A — Top salt 1,072 ft.; top lime 2,352 ft.; drlg. 2,550 ft.

Southern C. O. P. Co.'s No. 4 T-89-A Grisham-Hunter-A — Rig.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, 3-T-67-A, C SW NW NE Sec. 4, Blk. B-12, elev. 2,784 ft. — Top lime 2,632 ft.

Southern C. O. P. Co.'s No. 2 T-67-A, NE SE Sec. 42, Blk. B-5 — Top salt 1,835 ft.; top lime 2,630 ft; drlg. 2,625 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-A, NE cor. SE SE Sec. 42, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-A, SE cor. NE Sec. 42, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 2 Ida Hendricks 3-T-67-A — Top salt 1,525 ft.; top lime 2,454 ft; reaming 2,929 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-3-A, Sec. 4, Blk. B-12 — Drlg. 1,102 ft.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, T-67-E, SE NE Sec. 42, Blk. B-5 — Total depth 2,573 ft; rigging up standard tools.

Southern C. O. P. Co.'s No. 2 Ida Hendricks, T-67-E, NE cor. SE NE Sec. 42, Blk. B-5 — Drlg. 950 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-E, SE cor. NE NE Sec. 42, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-E, NE cor. Sec. 42, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 2 T-67, Ida Hendricks-F — Top salt 1,715 ft; total depth 2,250 ft; rigging up rotary.

Southern C. O. P. Co.'s No. 5 T-67 Ida Hendricks-C — Top pay 2,890 ft.; drlg. 3,025 ft.

Southern C. O. P. Co.'s No. 3 T-67 Hendricks-B — Top salt 1,866 ft.; top lime 2,638 ft; shut down 3,085 ft. for orders.

Southern C. O. P. Co.'s No. 3 T. G. Hendricks, T-67-3B, NE SW SW Sec. 33, Blk. 26 — Top lime 2,436 ft; coring 2,756 ft.

Southern C. O. P. Co.'s No. 3 Hendricks, T-67-3B, NE NW SW Sec. 33, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-B, SE NE SE Sec. 44, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-B, NE SE SE Sec. 44, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 5 Ida Hendricks, T-67-B, SE cor. SE Sec. 44, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 1 T-88 Ida Hendricks-C, NW cor. Sec. 28, Blk. B-5 — 6,000,000 ft. gas 2,665 ft.; top pay 2,883-96 ft; 500 ft. oil; drlg. 2,906 ft.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-88-C — Top salt 1,290 ft.; top lime 2,535 ft; preparing to run 5-in. casing

Southern C. O. P. Co.'s No. 1 Ida Hendricks, T-88-G, SW SE Sec. 28, Blk. B-5 — Top lime 2,612 ft; fishing 2,906 ft.

Southern C. O. P. Co.'s No. 2 T-88 Hendricks-H — Top salt 1,232 ft; top lime 2,697 ft; shut down 2,998 ft. for orders.

Southern C. O. P. Co.'s No. 2 Ida Hendricks, T-88-H, SW NW SW Sec. 28, Blk. B-5 — Top salt 1,300 ft; total depth 2,703 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-I, NE SE E half NE Sec. 30, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 4, Ida Hendricks, T-88-A, SE NE SE Sec. 44, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 5 Ida Hendricks, T-88-A, NE cor. Sec. 44, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-I, SE NE E half NE Sec. 30, Blk. B-5 — Rig.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-A, NE SE NE Sec. 44, Blk. 26 — Rig.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-88-I, SE cor. E half NE Sec. 30, Blk. B-5 — Location.

Southern C. O. P. Co.'s No. 1 T. G. Hendricks, T-88-K, NE cor. Sec. 41, Blk. 26 — Top salt 1,706 ft; drlg. 2,521 ft.

Southern C. O. P. Co.'s No. 2 T. G. Hendricks, T-88-K, SE NE SE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 3 T. G. Hendricks, T-88-K, NE SE NE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 4 T. G. Hendricks, T-88-K, SE SE NE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 5 T. G. Hendricks, T-88-K, NE NE SE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 6 T. G. Hendricks, T-88-K, SE NE SE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 7 T. G. Hendricks, T-88-K, NE SE SE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 8 T. G. Hendricks, T-88-K, SE cor. SE Sec. 41, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 1 Hendricks, T-88-M, SW cor. SE Sec. 33, Blk. 26 — Drlg. 1,570 ft.

Southern C. O. P. Co.'s No. 2 Hendricks, T-88-M, NW SW SE Sec. 33, Blk. 26 — Total depth 520 ft; mixing mud.

Southern C. O. P. Co.'s No. 3 Hendricks, T-88-M, SE NE SW Sec. 33, Blk. 26 — Rigging up rig.

Southern C. O. P. Co.'s No. 4 Hendricks, T-88-M, SE NW SW Sec. 33, Blk. 26 — Setting 12-in. casing 640 ft.

Southern C. O. P. Co.'s No. 5 Hendricks, T-88-M, SW SE SE Sec. 33, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 6 Hendricks, T-88-M, SE SW NW Sec. 33, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 7 Hendricks, T-88-M, NE SW NE Sec. 33, Blk. 26 — Location.

Southern C. O. P. Co.'s No. 1 E. G. Hutchings, T-90, NE cor. E half SE Sec. 47, Blk. 26, elev. 2,835 ft. — Top salt 925 ft.; top lime 2,340 ft.; total depth 2,705 ft.; rigging up.

Texon O. & L. Co.'s No. 2 Grisham-Hunter-A, NW cor. W half SE Sec. 41, Blk. B-5 — Top salt 1,450 ft.; top lime 2,324 ft; drlg. by tools 2,529 ft.

Texon O. & L. Co.'s No. 4 Grisham-Hunter-A, NE cor. W half SE Sec. 41, Blk. B-5 — Rig and shut down.

Texon O. & L. Co.'s No. 3 Hendricks-B, SE W half SW Sec. 45, Blk. 26 — Building rig.

Turman & Maxwell's No. 5 Hendricks, SE cor. E half NE Sec. 29, Blk. B-5 — Top lime 2,560 ft.; top salt 1,295 ft; drlg. by tools 2,966 ft.

Turman & Maxwell's No. 6 Hendricks, NW cor. E half NE Sec. 29, Blk. B-5 — Top salt 1,217 ft.; top lime 2,471 ft; top pay 2,780 ft; preparing to set 5-in. casing 2,930 ft.

White Eagle O. & R. Co.'s (was Gibson & Johnson's) No. 1 P. A. Lock, 1,320 ft. W of NE cor. Sec. 30, Blk. 74, NW of discovery well, elev. 2,830 ft. — Top lime 3,155 ft; shut down 3,700 ft; 500 ft. sulphur water in hole from 3,695-3,700 ft.

There are many sound reasons why in the interest of the producer's pocketbook and the nation's supply of an irreplaceable commodity, all new fields should be afforded the protection of modern drilling and cementing methods. Three of these reasons are Smackover, Tonkawa and Seminole.

HALLIBURTON OIL WELL CEMENTING CO.
Duncan, Oklahoma

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

ACTIVATED CARBON FROM COAL BY URBAIN PROCESS

Have you any information about the Urbain process, which I am told is a process for making activated carbon from coal? Any details about this will be appreciated.—F. W. A.

The Urbain process is reported to have been used in France during the past several years. There was a description of the process in the Petroleum Times, April 16, 1927, a part of which is quoted below.

The raw material is carbonized in the presence of chemicals so as to yield a direct product of activated material. As a raw material a soft coal, Dutch peat, is used because of its low ash content. This is mixed with phosphoric acid in the cold in the proportions of 6 to 7 kilos of peat to 2 to 3 kilos of the acid, depending on the moisture content of the peat, which varies from 15 to 25 per cent. The acid hydrolizes the cellulose of the peat and form a jelly-like solution. The product is divided into small portions and heated to about 900 degrees Fahrenheit to expel water and to produce incipient combustion. At this stage it is transferred to retorts and heated to over 1,800 degrees. The phosphoric acid, in the form of phosphorous pentoxide, tends to become reduced to phosphorous, so air is carefully admitted through the end of the retort in order to oxidize any phosphorous which may have been reduced. At the temperature used the phosphorous pentoxide volatilizes and passes out of the retort into suitable towers, where it is absorbed. The acid thus recovered amounts to 95 per cent of the quantity used. The carbon is washed several times with water to remove the last traces of acid and the latter is recovered from the solution by means of sodium carbonate. After washing, the carbon is dried at about 900 degrees, sieved and sorted.

This carbon is made in three grades, varying in adsorptive capacity, the best being used for adsorption from gases or hydrocarbons or other volatile solvents. The second grade is less active but is suitable for a variety of purposes; and the third grade, known as Phospho-Karbon, is characterized by a somewhat weak retention of the adsorbed substances.

HYDROGEN FORMED WHEN CRACKING

Is hydrogen considered to be present in all gas from any cracking still or does it come off at some definite temperature?—A. C. W.

So far as practical results are involved it may be said that hydrogen is a normal constituent of the gas from a pressure still. The quantity that may be present varies with pressure, temperature, and character of the oil charged. The larger the molecule the easier it is to cause decomposition, and we may write a chemical equation to illustrate the formation of simpler bodies at low temperatures as being a direct spiltting into two products. The objection to this is that it does not correspond with facts. There would have to be a separation of carbon and we know that at low temperatures there is practically no carbon produced and there is no hydrogen formed at low temperatures. The proportion of saturated to unsaturated hydrocarbons has a bearing. As the temperature increases there is usually an increase in the quantity of unsaturated hydrocarbons, separation of carbon, and the formation of hydrogen. If the pressure is increased the boiling point is lowered and consequently the rate of decomposition is less at higher pressures for a given temperature.

The general conditions are indicated in the above. Experiments made at ordinary pressure have shown that hydrogen may be formed from the kerosene fraction at 875 degrees Fahrenheit. The quantity of hydrogen reported for these experiments was less than 1 per cent. Other investigators have cracked gas oil under 80 pounds pressure and 1,000 degrees Fahrenheit temperature which gave a gas containing 15 per cent hydrogen. It appears that pressure has some direct influence on the cracking other than the lowering of the boiling point, under the temperature conditions as found in the cracking still. No decomposition will take place when pressure alone is applied. The period under which the oil is exposed to cracking conditions is another factor. All of these variables have some bearing upon the formation of hydrogen, and while a definite point for the formation of hydrogen may be found for one set of conditions, slight changes very likely influence this too.

BREATHING OF TANKS AND EVAPORATION LOSSES

How many cubic feet of air and vapor at atmospheric pressure passed through a breathing valve during one hour period due to breathing and pumping in? How many gallons of gasoline were lost? Would appreciate it very much if these questions could be solved and am not so much interested in the answer for the above set of conditions, but the procedure followed to establish the breathing loss for any set of conditions.—H. T. D.

You will find much information on this subject in the article, "Prevention of Evaporation Losses from Gasoline Storage Tanks," by Wilson, Atwell, Brown and Chenicek, Ind. and Eng. Chem., Vol. 17, page 1,030, (1925). The report is illustrated and there are several curves. The information below may give you the desired suggestions.

The loss of gasoline due to breathing may be calculated by making numerous assumptions as the following illustrates: "The loss is figured per 1,000 cubic feet of vapor space. A constant barometric pressure of 750 mm. is assumed. Assuming that at night the surface temperature of the gasoline and the vapor above it reach equilibrium at 75 F., where the gasoline has a vapor pressure of 265 mm., then the pounds of air per 1,000 cubic feet of vapor mixture will be

$$\text{Air} = 100 \times \frac{29^*}{359} \times \frac{750-265}{750} \times \frac{750}{760} \times \frac{492}{535} =$$

47.4 pounds."

*The molecular weight of a gas in pounds always occupies substantially 359 cubic feet under standard conditions. The temperatures are Fahrenheit on the absolute scale. The molecular weight of air is 29 pounds.

"At the hottest part of the day the maximum vapor temperature is assumed to be 105 degrees and the concentration of the gasoline in the vapor to be in equilibrium with the surface of the gasoline, the temperature of which is 95 F. The weight of air in the vapor mixture at this time would be

$$\text{Air} = 1{,}000 \times \frac{750-375}{750} \times \frac{750}{760} \times \frac{492}{565} \times \frac{29}{359}$$

=34.7 pounds."

Under these conditions the air breathed out would be 47.4—34.7=12.7 pounds per 1,000 cubic feet of vapor space. Assuming that the average temperature and the partial pressure of the gasoline in the expelled air was the mean between the initial and final states in these respects, the volume of air and gasoline breathed out is calculated as follows:

Volume of air at

$$750 \text{ mm.} = 12.7 \times \frac{359}{29} \times \frac{550}{492} \times \frac{760}{750} = 178$$

cubic feet.

Volume of gasoline vapor=

$$178 \times \frac{320}{750-320} = 132 \text{ cubic feet.}$$

Total volume breathed out 310 cubic feet.

A 120 by 40 storage tank with an 8-foot pitch to the roof filled to the 39-foot level has a vapor space of 41,500 cubic feet for which the daily breathing loss would be 12,900 cubic feet. If the average composition of the hydrocarbons in the vapor is assumed to be hexane, the volume of liquid hexane lost per breath is as follows:

$$132.5 \times 41.5 \times \frac{492}{550} \times \frac{750}{760} \times 0.24 = 1{,}165$$

pounds or 215 gallons."

THICKNESS OF EARTH'S CRUST

The movement of portions of the earth, earthquakes and molten rock from volcanoes suggest that the crust of the earth is very thin. When drilling a very deep well it may be possible to go through this crust and start a volcano of great size. Is the actual thickness of the earth's crust known?—E. B.

There may be some chance for drilling into something of the volcano order in certain localities, as is evidenced by the presence of hot water and even steam in some holes that have been drilled. We have no desire to have a part in the drilling of a deep hole close to a volcano. However, it is thought that there is little danger of man penetrating the average crust.

The different ideas which have been advanced by numerous scientists suggest that there may be a crust a few miles thick and others that it is solid all the way through.

According to William Bowie of the United States Coast and Geodetic Survey, analyses of geodetic data and of tests involving the densities indicate that the crust of the earth is more than 60 miles thick. This depth was determined mathematically.

SPECIFIC GRAVITY OF HEAVY FUEL OIL

Will you kindly advise us as to the method for obtaining the specific gravity of fuel oil from degrees A.P.I. given if the reading is less than 10 degrees Baume, that is for oil heavier than water? Does the modulus 141.5 hold for a range of 2 to 10 degrees A.P.I.?—G. W. S.

The modulus for liquids heavier than water is 145 used as follows:

$$\text{Baume degrees} = 145 - \frac{145}{\text{Sp. gr.}}$$

$$\text{Also specific gravity} = \frac{145}{145 - \text{Baume}}$$

The table below shows the equivalents of degrees Baume and specific gravity at 60 degrees Fahrenheit for liquids heavier than water.

Degrees Baume	Specific Gravity	Degrees Baume	Specific Gravity
0.0	1.0000	5.0	1.0357
.1	1.0007	.1	1.0365
.2	1.0014	.2	1.0372
.3	1.0021	.3	1.0379
.4	1.0028	.4	1.0387
.5	1.0035	.5	1.0394
.6	1.0042	.6	1.0402
.7	1.0049	.7	1.0409
.8	1.0055	.8	1.0417
.9	1.0062	.9	1.0424
1.0	1.0069	6.0	1.0432
.1	1.0076	.1	1.0439
.2	1.0083	.2	1.0447
.3	1.0090	.3	1.0454
.4	1.0097	.4	1.0462
.5	1.0105	.5	1.0469
.6	1.0112	.6	1.0477
.7	1.0119	.7	1.0484
.8	1.0126	.8	1.0492
.9	1.0133	.9	1.0500
2.0	1.0140	7.0	1.0507
.1	1.0147	.1	1.0515
.2	1.0154	.2	1.0522
.3	1.0161	.3	1.0530
.4	1.0168	.4	1.0538
.5	1.0175	.5	1.0545
.6	1.0183	.6	1.0553
.7	1.0190	.7	1.0561
.8	1.0197	.8	1.0569
.9	1.0204	.9	1.0576
3.0	1.0211	8.0	1.0584
.1	1.0218	.1	1.0592
.2	1.0226	.2	1.0599
.3	1.0233	.3	1.0607
.4	1.0240	.4	1.0615
.5	1.0247	.5	1.0623
.6	1.0255	.6	1.0630
.7	1.0262	.7	1.0638
.8	1.0269	.8	1.0646
.9	1.0276	.9	1.0654
4.0	1.0284	9.0	1.0662
.1	1.0291	.1	1.0670
.2	1.0298	.2	1.0677
.3	1.0306	.3	1.0685
.4	1.0313	.4	1.0693
.5	1.0320	.5	1.0701
.6	1.0328	.6	1.0709
.7	1.0335	.7	1.0717
.8	1.0342	.8	1.0725
.9	1.0350	.9	1.0733
		10.0	1.0741

In practice the indication of the hydrometer is observed, heavy scale 0 to 10, and the temperature noted. Read equivalent specific gravity from the above table. For every 10 degrees above 60 add 0.0035, then convert the total to Baume gravity. Example: 3.5 Baume indication at 140 F.

$$140 - 60 = \frac{80}{10} = 8 \times 0.0035 = 0.0280$$

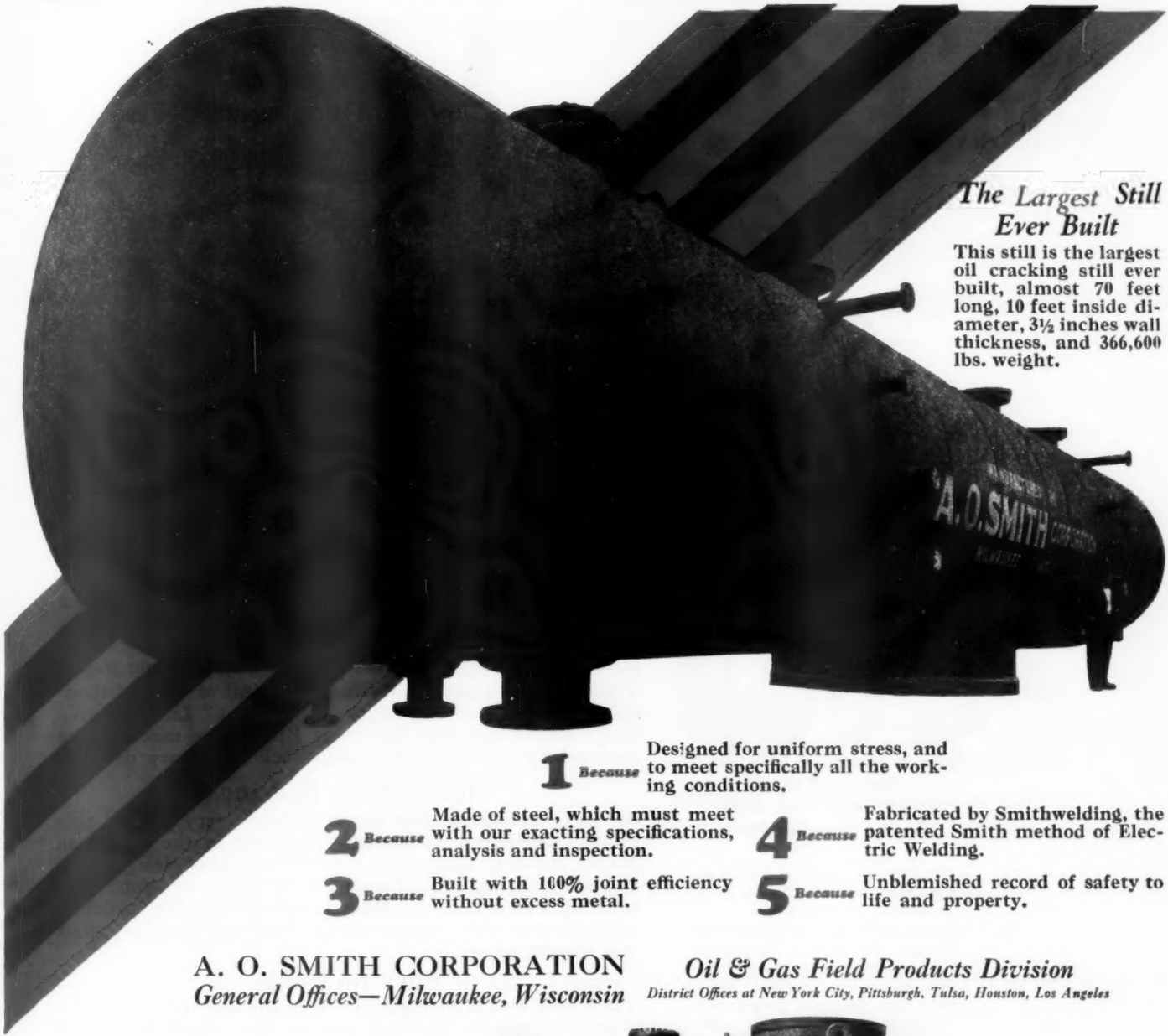
to be added.

Specific gravity equivalent of 3.5 = 1.0247 + 0.280 = 1 0527 or 7.3 Baume.

Some operators prefer to have all records in terms of the lighter than water scale and obtain approximate results from the following:

Baume heavy scale may be converted to A.P.I. by allowing 97.5 per cent of Baume gravity and subtracting from 10 which may be illustrated—7.3 × 97.5 per cent = 7.1175 then 10 — 7.1175 = 2.8.

SAFETY



The Largest Still Ever Built

This still is the largest oil cracking still ever built, almost 70 feet long, 10 feet inside diameter, 3½ inches wall thickness, and 366,600 lbs. weight.

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2 Because Made of steel, which must meet with our exacting specifications, analysis and inspection.

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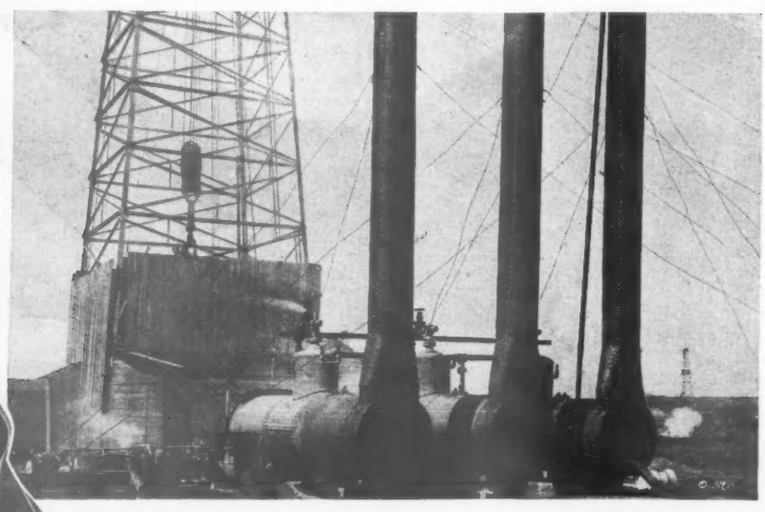
LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY

LUCEY HEAVY DUTY TRAVELING BLOCK
—In Use with Complete Lucey Rotary Outfit



Showing K 500 A
Lucey Heavy Duty, Roller Bearing Traveling Block

"In Perfect Condition"

after being in Continuous Use Since Aug. 24, 1926

"In August, 1926," writes a field superintendent from Trinidad, British West Indies, "we purchased one of your . . . traveling blocks. This block has been in continuous use since August 24th, 1926. Last month I had the drillers dismount this block to look at the bearings. They found all of the bearings in perfect condition, showing no wear." This operator's experience is but typical of that of thousands of others. "Wherever There's Oil," Lucey Heavy Duty Roller Bearing Traveling Blocks are meeting the demand for a long-lived, super-block for rotary drilling.

Illustration shows the following features of this widely used and popular block:

Close Fitting Sheaves and Plates; all nuts locked with cotter pins; bails forged in one piece—no welds; steel side bars designed to prevent hanging up in derrick; individual oil lead to each bearing for Alemite lubrication; center pin set above center to insure perfect balance and prevent upsetting.

Heavy Duty Bearings

Strength and endurance are built into every part of this block. Bearings used are manufactured by the American Roller Bearing Company, and are specially designed to withstand heavy service over a long period of time. The rollers are mounted in a cage, and provided with hardened steel sleeves and casings which eliminate wear on shaft and sheave wheel.

Easy on Cable

The sheave wheels are made of high grade cast iron, with extra large, accurately machined rope grooves, which lessen the wear on the cable. Sheave wheels of manganese steel, or of cast steel with hardened rims, can also be supplied on special order. Blocks come with or without rope guards, as specified.

Constructed according to A.P.I. Specifications.

Write for full information.

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LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY LUCEY

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 42)

Fleming and others' No. 1 Wengert, NW cor. NW Sec. 9-22-5w ..... Shut down 750 ft.
Scopple and others' No. 1 Schweer, C SW NE Sec. 13-21-4w ..... Shut down 1,850 ft.
Marland and Barnsdall's No. 1 Looman, NE SE Sec. 9-20-4w ..... Fishing 5,740 ft.
Marland Oil Co.'s No. 1 Miller, SW cor. SW Sec. 12-20-4w .. Shut down 4,586 ft., waiting on test Sec. 9-20-4w.

ELLIS COUNTY

Oklahoma Northern's No. 1 Young, NW cor. NW Sec. 9-21-25w ..... Fishing 300 ft.
Hoffman and others' No. 1 Ottes, NW cor. NE Sec. 20-15-8w ..... Rig blown down.

NOBLE COUNTY

Barnsdall Oil Co.'s No. 1 Bumberger, NE cor. NW SE Sec. 11-21-1 ..... Cellar.

KINGFISHER COUNTY

Slick & Harrington's No. 1 Cromer, SE cor. NE NE Sec. 25-19-5w ..... Location.
H. H. Morgan's No. 1 Buscon, SW cor. SE NE Sec. 30-16-9w ..... Shut down 1,610 ft.
Galt-Brown Oil Co.'s No. 1 Wolff, NW SE Sec. 6-16-7w .. Drilling 3,150 ft.
McKinney & Crawford's No. 1 Sturgeon, NE cor. SW Sec. 27-16-6w ..... Drilling 4,275 ft.
Wiley & Manahan's No. 1 Johnson, C NW Sec. 26-16-5w .. Shut down 4,512 ft.
Reiter-Foster Oil Co.'s No. 1 Unknown, SW cor. SE Sec. 23-15-5w ..... Rig.

LOGAN COUNTY

Champlin Refining Co.'s No. 1 Clark, SE cor. SW Sec. 8-19-4w ..... Drilling 5,455 ft.
Sinclair Oil & Gas Co.'s No. 1 Webber, SE cor. SE Sec. 18-19-4w ..... Drilling past pipe 4,500 ft., total depth 4,808 ft.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w .. Drilling 3,788 ft.
Garber & Pulse's No. 1 Widdoes, NE cor. SE NW Sec. 32-18-3w ..... Shut down 1,200 ft.
T. B. Slick's No. 1 Bryan, SW cor. SE Sec. 28-17-1 .... Plugging back to sand 5,630 ft.; having casing trouble.
Willis and others' No. 1 Sweezy, SW cor. NW SE Sec. 20-17-3 ..... Shut down 4,677 ft.
W. R. Ramsey's No. 1 McMillan, NW SW Sec. 24-15-2w .. Hole full of water 4,507-17 ft.; shut down for orders.
Bu-Vi-Bar's No. 1 Kirkpatrick, NE SW SW Sec. 12-15-1w. Drilling 4,736 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down.

MUSKOGEE COUNTY

Finefield and others' No. 1 Jobe, NE cor. NW SE Sec. 13-15-18 ..... Shut down 1,500 ft.
J. R. Parks' No. 1 Benge, CWL NE NW Sec. 13-15-19..... Dry and abandoned 1,415 ft.
Elk Drilling Co.'s No. 1 Jones, SW cor. SW Sec. 34-13-17 ..... Spudded and shut down.
L. T. Haney's No. 1 Mitchell, SE cor. NW SE Sec. 33-13-18 ..... Shut down 1,700 ft.
Roles.one and others' No. 1 Hixon, CNL SE NE Sec. 1-13-19 ..... Wilcox sand 2,000-40 ft., water; total depth 2,101 ft.; shut down.
J. L. Slusher's No. 1 Johnson, NE cor. SW NW Sec. 20-16-20 ..... Machine.

HUGHES COUNTY

Texas-Pacific Coal & Oil Co.'s No. 1 Stewart, SW cor. SE Sec. 11-5-8 ..... Casing 2,550 ft.
W. J. Monahaim's No. 1 Pusby, C NW NE Sec. 14-4-9..... Location.
Noble Oil & Gas Co.'s No. 1 Wickett, SE cor. SE Sec. 20-5-9 ..... Underreaming 1,390 ft.

OKLAHOMA COUNTY

Cromwell Oil & Gas Co.'s No. 1 Proctor, C SE Sec. 21-14-3w ..... Shut down 4,075 ft.
Slick & Bailey's No. 1 Koester, C SE NE Sec. 18-13-3w .. Cleaning out 3,800 ft.
Cromwell & Franklin's No. 1 Thompson, SW cor. NE NE Sec. 15-12-3w ..... Fishing 4-inch liner, 6,840 ft.
Cromwell & Franklin's No. 1 Gross, SW cor. NE SW Sec. 22-10-2w ..... Shut down 4,702 ft.

CREEK COUNTY

Lima O. & G. Co.'s No. 1 Grayson, NW cor. NE NE, Sec. 11-14-7 ..... Dry and abandoned, total depth 4,020 ft.

CANADIAN COUNTY

T. B. Slick and others' No. 1 Pazowrech, NW SE Sec. 29-13-5w ..... Hole full of water 4,338-4,452 ft.; shut down 4,580 ft.
Ramsey Brothers' No. 1 Newman, CSL NE Sec. 9-11-7w.. Standardizing 4,491 ft.

LINCOLN COUNTY

Bu-Vi-Bar Petroleum Co.'s No. 1 School Land, C NE SE Sec. 16-13-4 ..... Shut down 4,500 ft.

OKFUSKEE COUNTY

Prairie Oil & Gas Co.'s No. 1 Gray, SW cor. SW Sec. 19-11-7 ..... Dry and abandoned 4,835 ft.
Moose & Daniels' No. 1 Stidham, SW cor. NW Sec. 4-11-10 ..... Shut down 622 ft.

SEQUOYAH COUNTY

Citizens Gas Co.'s No. 1 Johnson, NE SW NE Sec. 33-12-7 ..... Drilling 400 ft.
Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-23 ..... Spudded and shut down

POTTAWATOMIE COUNTY

Shaffer-Kilgore-Sykes' No. 1 Ives, C SE SE Sec. 12-10-3 ..... Fishing 5,256 ft.
Prairie Oil & Gas Co.'s No. 1 Lumbley, SW NW SE Sec. 1-10-5 ..... Dry and abandoned 4,780 ft.
Central Commercial Oil Co.'s No. 1 McCrain, NW cor. NE SW Sec. 16-10-5 ..... Dry and abandoned 4,791 ft.
Superior Oil Co.'s No. 1 Herminghausen, SW cor. NW NE Sec. 24-8-2 ..... Fishing 4,365 ft.
Davy & Detrick's No. 1 McGehee, SW SE NW Sec. 10-6-2 ..... Fishing 4,998 ft.
Amerada Pet. Corp.'s No. 1 Gravel, SW SE NE Sec. 1-8-4 ..... Fishing 4,252 ft.

CADDO COUNTY

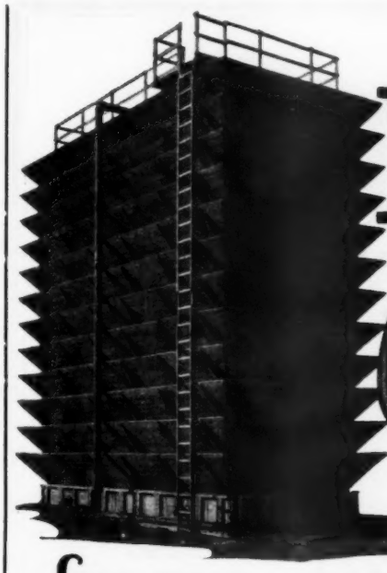
Magnolia Petroleum Co.'s No. 1 Shelby, SW cor. SW Sec. 28-10-12w ..... Drilling 2,397 ft.
J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w Shut down 150 ft.
W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.
English Drilling Co.'s No. 2 Pruitt, CNL NW SE Sec. 23-6-10w ..... Rig.

OSAGE COUNTY

Prairie Oil & Gas Co.'s No. 1, SE cor. NE Sec. 11-24-6 .. Plugging back to sand 2,694-97 ft.
Devonian Oil Co.'s No. 1 NW cor. SE Sec. 18-22-8 ..... Shut down 3,115 ft.

SEMINOLE COUNTY

T. B. Slick's No. 1 School Land, SE cor. SE Sec. 16-6-5... Drilling 1,530 ft.
Roxana and Barnsdall's No. 1 Stidham, NW cor. NE Sec. 6-10-7 ..... Location.
Prairie Oil & Gas Co.'s No. 1 Davis, NE SE Sec. 21-10-7.. Rig.
Prairie Oil & Gas Co.'s No. 1 Varnum, NW cor. SW SW Sec. 5-9-6 ..... Wilcox sand 4,441-42 ft., water, plugging back to Hunton lime.
The Texas Company's No. 1 Reed, SW cor. SW Sec. 12-8-5 ..... Wilcox sand 4,720 ft.; hole full of water; dry and abandoned.
Twin State Oil Co.'s No. 1 Walker, NE cor. NE Sec. 5-7-6 ..... Rig on ground.
Simon & Bean's No. 1 Palmer, SE cor. NW NE Sec. 7-7-6 ..... Rigged up and shut down.
Barnsdall Oil Co.'s No. 1 Guinn, SW cor. SW Sec. 16-7-5.. Rig.
Indian Terr. Ill. Oil Co.'s No. 1 White, NE cor. NE SW Sec. 21-7-5 ..... Rig.
Reiter-Foster Oil Co.'s No. 1 Coat, SW cor. NW SW Sec. 14-7-6 ..... Spudding.
Indian Territory Illuminating Oil Co.'s No. 1 Marshall, NW NW SW Sec. 32-7-7 ..... Drilling 4,769 ft.
Magnolia Petroleum Co.'s No. 1 Vierson, SE SE NW Sec. 5-6-7 ..... Drilling 3,770 ft.
Gardner Petroleum Co.'s No. 1 Unknown, NW cor. SE Sec. 26-6-7 ..... Dry and abandoned 3,098 ft.
Fuhrman Petroleum Co. and Superior Oil Co.'s No. 1 Davis, SW SW SE Sec. 3-10-6 ..... Location.



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C. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Drilling 480 ft.
Grover Hahn and others' No. 1 Mitchell, SE cor. NE SW Sec. 6-10-7 ..... Rigging up rotary.
E. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Drilling 1,410 ft.

DEWEY COUNTY

Huckaby & McCoy's No. 1 Perfect, NE cor. NE Sec. 9-18-15w ..... Shut down 3,870 ft.

BECKHAM COUNTY

C. & H. Petroleum Co.'s No. 1 Barnes, SW cor. NW NE Sec. 32-9-22w ..... Shut down 3,800 ft.

ATOKA COUNTY

G. S. Cochran's No. 1 Hampton, NW cor. NW Sec. 27-1-14 ..... Rig.
Pfeffel and others' No. 1-A Carter, NE cor. NE Sec. 35-9-22w ..... Shut down 300 ft.

GRADY COUNTY

Remington and others' No. 1 Fryrear, SW SW NE Sec. 13-9-5w ..... Shut down 720 ft.; may start up soon.
Bedner and others' No. 1 Willis, C SW NW Sec. 13-7-5w ..... Shut down 2,450 ft.
Nichlos & Page's No. 1 Drake, SE NE SE Sec. 7-5-7w ..... Shut down 1,900 ft.
Wirt Franklin Petroleum Co.'s No. 1 Garden, SE cor. SW NE Sec. 1-4-7w ..... Sand 2,003-12 ft.; 1,000,000 ft. gas
Commercial Development Co.'s No. 1 Chrisman, C NE NE Sec. 21-4-7w ..... Spudded.
Magnolia Petroleum Co.'s No. 1 Pursley, SE SW NW Sec. 8-4-6w ..... Dry and abandoned 3,905 ft.

MCINTOSH COUNTY

Marlone Oil Co.'s No. 1 Sanders, NW cor. NE SW Sec. 10-9-18 ..... Shut down 2,250 ft.

CLEVELAND COUNTY

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Shut down 2,975 ft.

KIOWA COUNTY

Blue Mountain Oil Co.'s No. 1 Jones, SE cor. NW NW Sec. 17-5-14w ..... Drilling 525 ft.
Gould and others' No. 1 Patton, NW cor. SW SE Sec. 17-5-14w ..... Dry and abandoned 380 ft.
Johnson & McDowell's No. 1 Thompson, SW cor. NE Sec. 6-6-15w ..... Rig and tools.
Dave Malernec's No. 1 Van Kirk, NW cor. NW Sec. 35-7-15w ..... Casing 490 ft.
A. C. Varner and others' No. 1 Bonham, CSL NW NW Sec. 5-6-18w ..... Shut down 1,127 ft.

PONTOTOC COUNTY

Gillespie & Gant's No. 1 Taylor, SW SW SE Sec. 12-5-4 .. Sand 2,818-52 ft., water; plugged back 2,570 ft., shot 80 and 20 quarts; swabbed 29 bbls.; shut down.
T. B. Slick's No. 1 Barnett, NE SE NW, Sec. 13-5-6 .... Bad hole, 3,916 ft.
Sinclair Oil & Gas Co.'s No. 1 McDaniel, NE cor. NE Sec. 17-5-6 ..... Drilling 3,620 ft.
Mid-Continent Petroleum Corp.'s No. 1 Harjo, SE NE NE Sec. 14-5-7 ..... Sand 2,618-22 ft.; 10,000,000 ft. gas.
T. B. Whitney and others' No. 1 Moore, SW cor. SE Sec. 17-5-9 ..... Shut down 2,654 ft.
Winkler and others' No. 1 Timer, C SW SE Sec. 31-5-9 .. Shut down 2,761 ft.
R. F. Garland's No. 1 Strickland, SW NW SW Sec. 10-4-3 ..... Shut down 2,650 ft.
Marland Oil Co.'s No. 1 Lawrence, C SW SE Sec. 10-4-4 .. Dry and abandoned 2,196 ft.
C. J. Shervin and others' No. 1 Wright, NW NE NE Sec. 18-4-6 ..... Shut down 1,925 ft.
Boles and others' No. 1 Rayburn, SW SE Sec. 35-4-6 .... Shut down 1,340 ft.
J. E. Crosbie's No. 1 Nowabbl, SE NE SW Sec. 8-4-7 ..... Testing sand 1,044-54 ft.; show oil estimated 60 bbls. day.
Texas-Pacific Coal & Oil Co.'s No. 1 Stewart, C SW SE Sec. 11-5-8 ..... Drilling 2,260 ft.
Henry and others' No. 1 Gregg, SW SE NW Sec. 14-4-7 .. Shut down 1,090 ft.
Oklahoma Portland Cement Co.'s No. 1 Mathews, C SW NW Sec. 24-4-7 ..... Drilling 1,790 ft.

GARVIN COUNTY

Dixie Oil Co.'s No. 1 Perkins, SE NW Sec. 15-4-1 ..... Drilling 4,955 ft.
Magnolia Petroleum Co.'s No. 1 Vaughn, NW SW NW Sec. 12-3-1 ..... Drilling 5,260 ft.
Heath & Bauman's No. 1 Hattell, SW SE SW Sec. 10-3-3 ..... Shut down 1,640 ft.

COMANCHE COUNTY

Jolly-Ogg Oil Co.'s No. 1 Neeley, SE NE Sec. 24-3-10w ..... Drilling 2,370 ft.
Ashcraft and others' No. 1 School Land, SE cor. SE Sec. 20-2-10w ..... Broken sandy lime 822-954 ft., swabbed 3 bbls.; total depth 976 ft.; shut down; material moved out.
Jenkins and others' No. 1 Smith, SW cor. SE SE Sec. 34-1-10w ..... Shut down 1,530 ft.
Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w .. Reaming pipe 3,315 ft.

COAL COUNTY

McGraw and other's No. 1 Patton, SW SE NE Sec. 35-1-8 ..... Drilling 1,138 ft.
Indian Territory Illuminating Oil Co.'s No. 1 Harris, SW cor. NW Sec. 10-1-11 ..... Fishing 1,630 ft.

OKLAHOMA PANHANDLE
CIMARRON COUNTY

Phillips and others' No. 1 Unknown, NW cor. NW Sec. 24-6-2 ..... Shut down 4,340 ft.
Sinclair Oil & Gas Co.'s No. 1 School Land, NW cor. NW Sec. 22-5-2 ..... 4,872 ft., will plug.
Ramsey Brothers' No. 1 School Land, NE SW SW Sec. 21-5-5 ..... Drilling 3,765 ft.
Ramsey Brothers' No. 1 Unknown, NW NE Sec. 27-5-5 .. Shut down 4,100 ft.
Ramsey Brothers' No. 1 School Land, SE SE Sec. 34-4-1 .. Drilling 3,850 ft.
Gladys-Belle Oil Co.'s No. 1 Iserial, SW NE Sec. 25-3-7 .. Plugging 4,392 ft.
Valerius & Wilkinson's No. 1 Unknown, SE cor. NE Sec. 25-3-7 ..... Drilling 2,545 ft.
H. F. Wilcox Oil & Gas Co.'s No. 1 Zea, NE SW Sec. 28-3-13 ..... Shut down 3,765 ft.
Skaer and others' No. 1 Mathis, SW NE NE Sec. 17-3-23 .. Drilling 2,227 ft.
Ross Fenton and others' No. 1 Graves, NE NE Sec. 2-2-9 .. Spudded and shut down.

TEXAS COUNTY

Danner Oil Co.'s No. 1 Graves, NE cor. SW SW Sec. 23-2-18 ..... Shut down 700 ft.
Newsom and others' No. 1 Allison, SE SE Sec. 4-1-12 ..... Shut down 4,040 ft.
Dotton and others' No. 1 Baker, C NW Sec. 4-1-13 ..... Rig blown down.
H. & H. Oil Co.'s No. 1 Hitch, NE cor. NE Sec. 26-1-15 .. Shut down 600 ft.
Three Way Oil Co.'s No. 1 Cane, SW NW Sec. 11-1-18 ... Hole full of water at 3,318-58 ft.; shut down.
Conley and others' No. 1 Unknown, SE cor. NW Sec. 5-1-19 ..... Spudded and shut down.
Texas County Gas Co.'s No. 1 Bacon, C NE NE Sec. 17-3-15 ..... 10,000,000 ft. gas 2,606-42 ft.

SOUTHERN OKLAHOMA
BRYAN COUNTY

Green Oil & Ref. Co.'s No. 1 Kemp, SE cor. NW NW Sec. 28-8s-9 ..... Shut down 600 ft.
Alexander & Oppenheimer's No. 1 Hampton, SE cor. NE Sec. 26-7s-11 ..... Shut down 1,425 ft.

JEFFERSON COUNTY

J. R. McCoy and others' No. 1 Smith, SE cor. NW Sec. 14-7s-6w ..... Rigged up and shut down.
W. Bassett's No. 1 Johnson, NE NW Sec. 15-6-8w ..... Location.
Amerada Petroleum Co.'s No. 1 Emerson, NW cor. SE SW Sec. 28-5s-8w ..... Drilling 260 ft.
Wirt Franklin Petroleum Co.'s No. 1 Foster, CNL NW SW Sec. 35-45-4e ..... Rig.

CHOCTAW COUNTY

Hugo Gay's No. 1 Smith, SE cor. SW NW Sec. 27-6s-16 .. Shut down 1,540 ft.
Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19 ..... Shut down 1,346 ft.

TILLMAN COUNTY

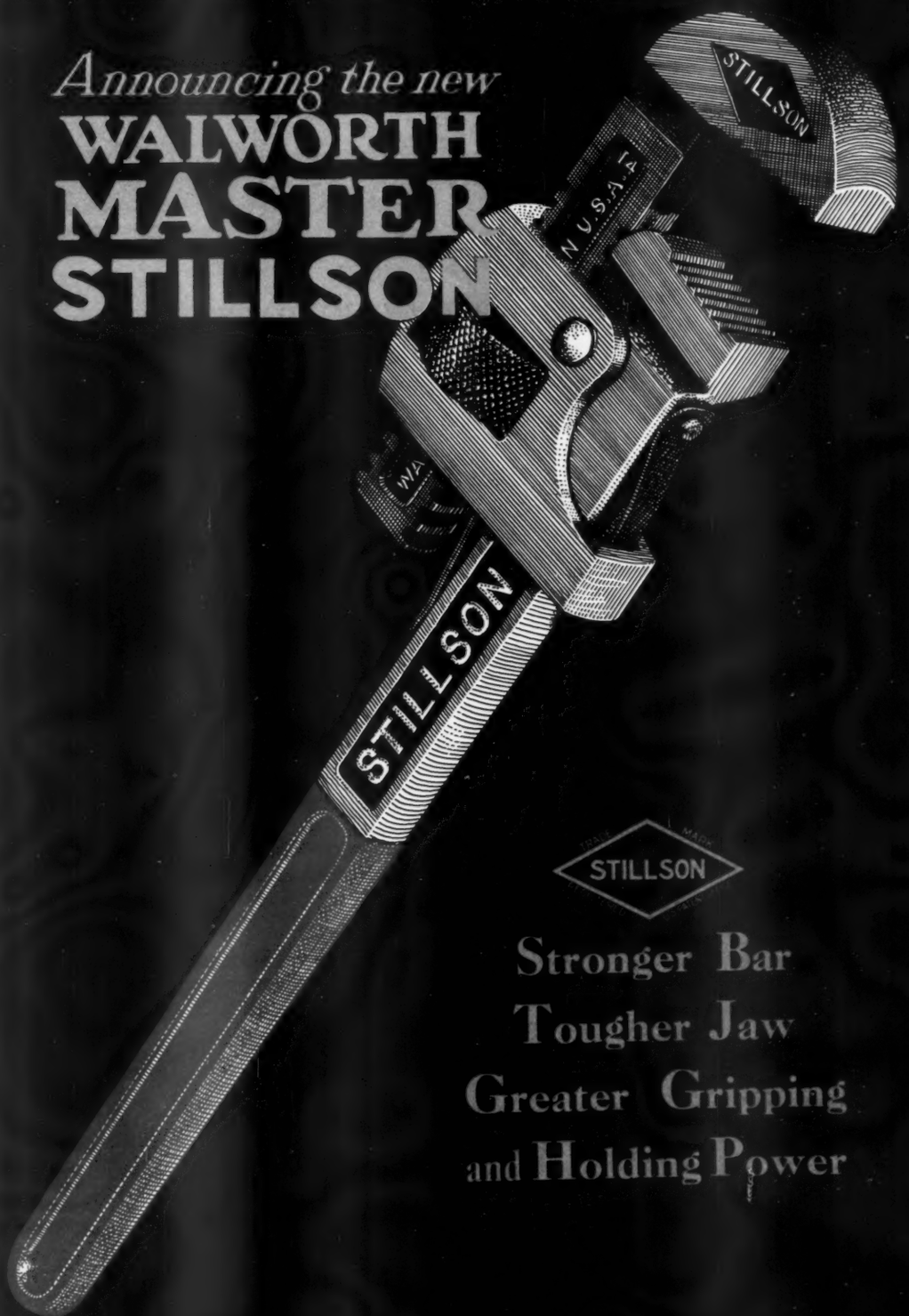
Bray and others' No. 1 Barker, NE cor. SW NW Sec. 9-1-15w ..... Drilling 650 ft.
A. N. Pearson's No. 1 Mounts, SW cor. SW Sec. 3-5s-15w .. Rig.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w ..... Drilling 2,540 ft.

MARSHALL COUNTY

Laurel Oil & Gas Co.'s No. 1 Chas Inc, SE NW Sec. 26-4s-5 ..... Dry and abandoned 4,190 ft.
Magnolia Petroleum Co.'s No. 2 Marshall, SW cor. NW SW Sec. 26-5s-7 ..... Drilling 620 ft.

Announcing the new

WALWORTH MASTER STILLSON



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Tougher Jaw
Greater Gripping
and Holding Power

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EVERY WORKING PART of the *new* Walworth Master Stillson has been improved, giving this superb tool tremendously increased strength, toughness, and durability. The basic design, originated by Dan Stillson in Walworth

THE JAW

By the most modern scientific heat treatment the strength of the jaw has been greatly increased. New production methods insure a uniformity in the quality of this forged steel jaw which insures that every Master Stillson is identical.

THE BAR

Tests which wrecked all other types of wrenches which we could find on the market left the bar of the Master Stillson unharmed. The toughness and strength built into the steel are such as to resist overloads which bent or broke the best handles we were able to produce under our former manufacturing practices.

THE TEETH

New hardening processes, scientifically developed and automatically controlled, give to the teeth of the Master Stillson

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MASTER

shops in 1869, is unchanged. The Master Stillson is no heavier; it retains the fine balance and working ease characteristic of the Genuine Walworth Stillson. Yet, the Master Stillson is upwards of 50 per cent stronger.

a gripping and holding power far superior to even the old Walworth Stillson. Moreover, a slight change in the design of the teeth adds to their strength, so that the Master Stillson survives shocks and excess loads which shear off or break the teeth of imitation Stillsons.

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Improvements in the Master Stillson enable it to withstand tests of far greater severity than ever before were attempted. We had to improve the quality of the nut to bring it up to the standard of the other parts.

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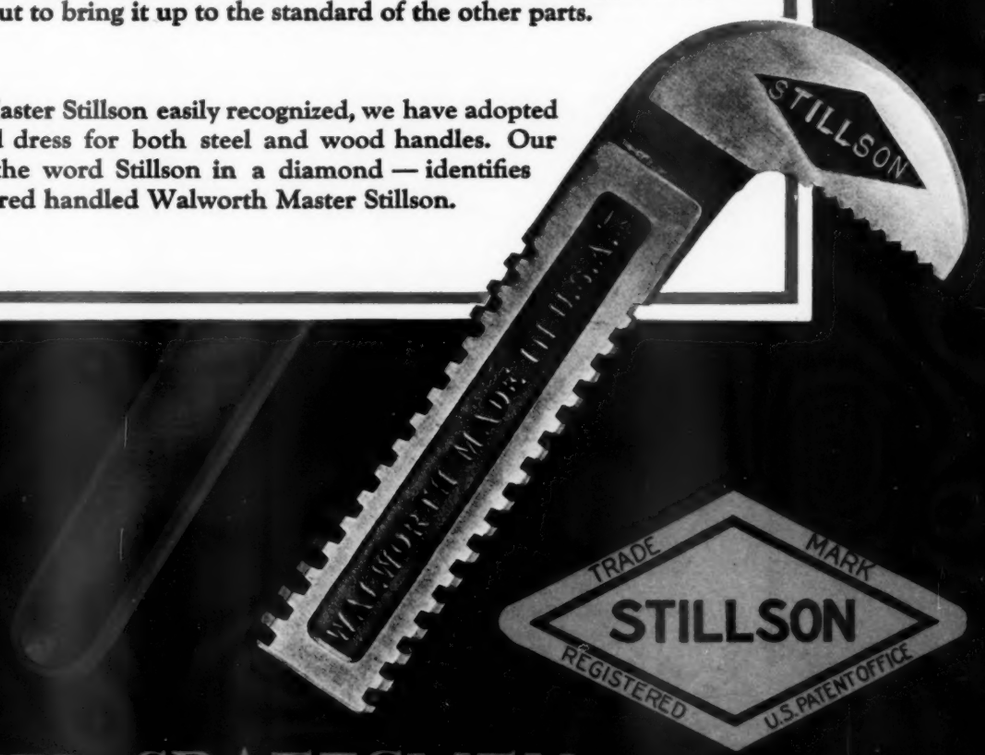
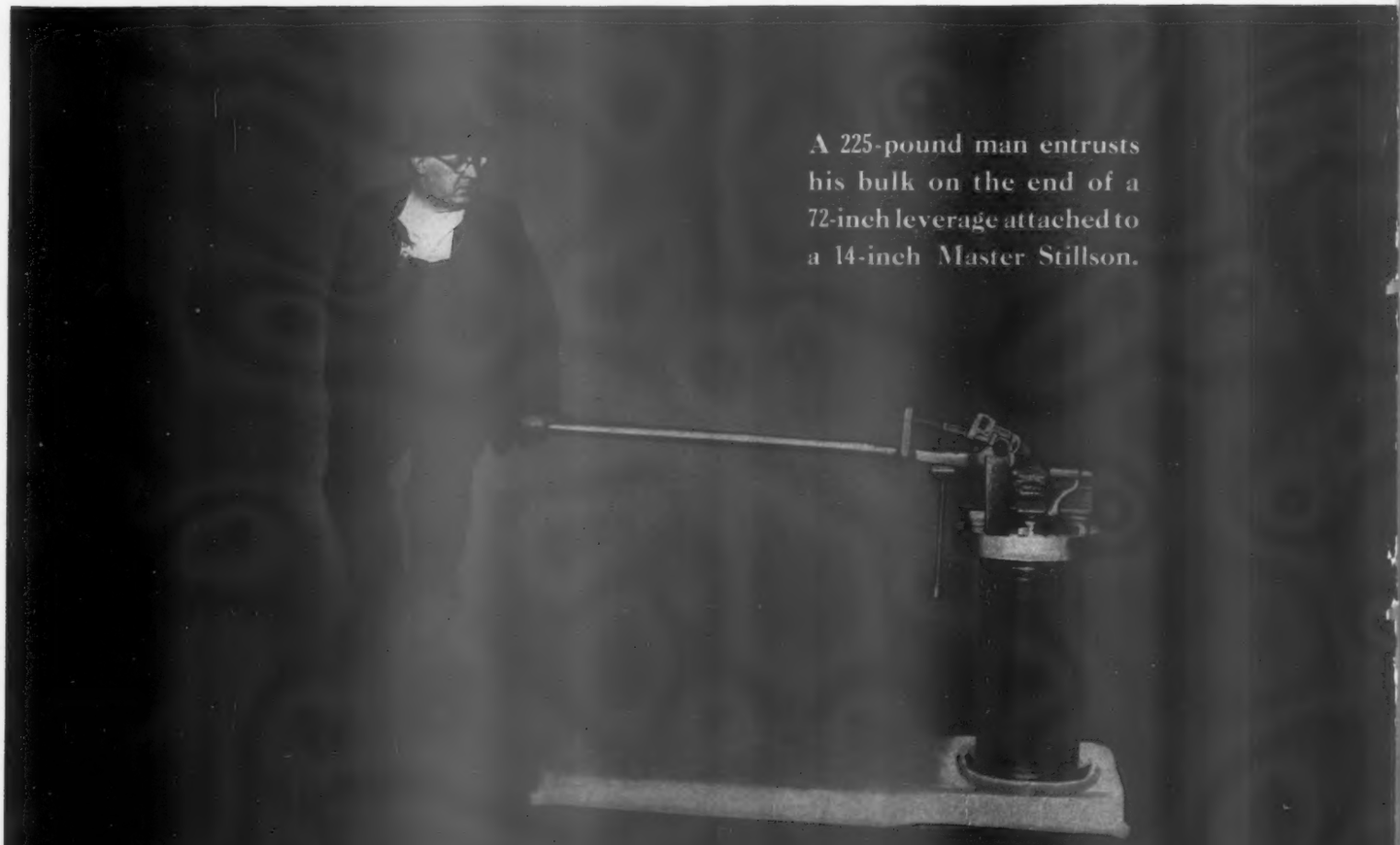


MASTER CRAFTSMEN



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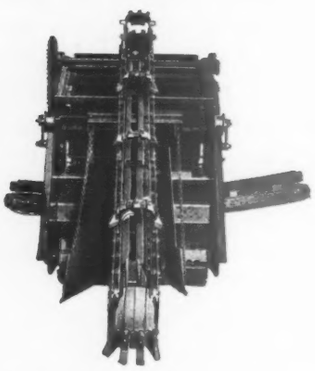
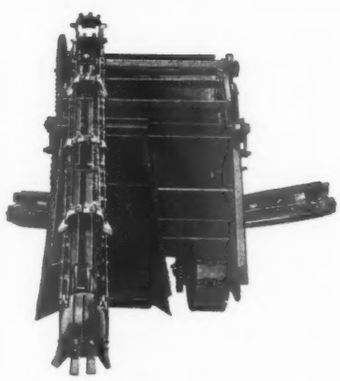


Boom at Center—Quickly and easily shifted to either side. Digs in any position across back frame.

Greater weight and balanced machinery layout prevent jumping while digging. Therefore, the ditch line is maintained by the "Little Wonder" Ditcher. Positive crowding of boom against breast of the ditch also aids in holding ditch line. Austin has the experience required to build a ditcher of unmatched performance and one that will measure up to requirements.



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Alter and others' No. 1 Brown, NE cor. NW NW Sec. 11-4-6 ..... Dry and abandoned 301 ft.

STEPHENS COUNTY

Pierce & Brown's No. 1 Garland, SE NW NE Sec. 34-2s-6w ..... Shut down 1,700 ft.
Ward, Martin & Smythe's No. 1 Vestal, NE cor. SE Sec. 7-3-7w ..... Rig.

JOHNSTON COUNTY

McPherson and others' No. 1 Wyand, CSL NE NW Sec. 7-2s-9 ..... Shut down 4,440 ft.
Wapanucka Oil Co.'s No. 1 Banks, Sec. 28-2s-9 ..... Shut down 1,530 ft.

CARTER COUNTY

Greems and others' No. 1 Morris, CSL NW NE Sec. 19-1s-2w ..... Shut down 3,463 ft.

MURRAY COUNTY

Thompson Oil Co.'s No. 1 Freeman, SE cor. Sec. 27-1s-2... Rig.
Gilcrease Oil Co.'s No. 1 Wolf, SE cor. NE Sec. 20-1-2.... Drilling 1,600 ft.
Revels & Magee's No. 1 Labor, NW cor. NW Sec. 17-1-2.. Shut down 240 ft.

KANSAS WILDCATS

(Continued from Page 44)

CHASE COUNTY

Grieser & Fowler's No. 1 Carson, NE cor. NE Sec. 9-21-7 ..... Shut down 2,025 ft.

CLARK COUNTY

Skelly Oil Co. & Merriam's No. 1 Winter, C E half Sec. 17-31-12w ..... Drilling 3,512 ft.
Walker & Warner's No. 1 Mitchell, SW cor. NE Sec. 16-31-23w ..... Shut down 600 ft.

CLOUD COUNTY

Concordia Producing & Refining Co.'s No. 1 Murdock, SE cor. SE Sec. 6-6-4w ..... Fishing 3,590 ft.

COWLEY COUNTY

Allison & Fitzwilliams' No. 1 Shapland, NE cor. NW SE Sec. 20-30-6 ..... Shut down 790 ft.
Barnsdall Oil Co.'s No. 1 Russell, NE cor. NW SE Sec. 15-33-4 ..... Drilling 1,610 ft.
Derby Oil Co.'s No. 1 Seaman, NE cor. SE NE Sec. 32-30-3 ..... Drilling 2,802 ft.
John Herron and others' No. 1 Marshall, SW cor. NE Sec. 36-30-6 ..... Shut down 1,645 ft.
Meridian Gas Co.'s No. 1 Roselle, SW cor. SE Sec. 8-35-1.. Drilling 2,010 ft.
Otstot et al's No. 1 Volker, NW cor. NE Sec. 9-35-1.... Rig.
Harris & Hahn's No. 1 Gamble, C NW NW Sec. 17-35-2 ..... Shut down 1,400 ft.
E. B. Shawver and others' No. 1 Disser, NW cor. NW Sec. 10-34-3 ..... Underreaming 2,475 ft.
E. B. Shawver's No. 1 Mullett, C NW SE Sec. 31-34-3.... Drilling 1,460 ft.
Vickers Petroleum Co.'s No. 1 Daniels, NE cor. NW Sec. 2-30-3 ..... Drilling 1,640 ft.
E. B. Shawver's No. 1 Mullett, C NW SE Sec. 31-34-3; gas rights only ..... Spudded and shut down.

DICKINSON COUNTY

Franks & Johnson's No. 1 Schiessner, C SW NE Sec. 18-16-4 ..... Rig.
McBride & Goen's No. 1 Shirley, NE cor. SW Sec. 21-12-4 ..... Dry and abandoned 2,469 ft.
Phillips Petroleum Co.'s No. 1 Grayler, SE cor. NW Sec. 11-14-4 ..... Drilling 530 ft.

ELLIS COUNTY

Derby Oil Co.'s No. 1 Weigel, C NW Sec. 25-2-17w..... Drilling 900 ft.
J. H. Tatlock et al's No. 1 Leiker, NW cor. NE NE Sec. 26-13-16w ..... Dry and abandoned 3,507 ft.

GRABY COUNTY

Pioneer Oil Co.'s No. 1 Chase, SE cor. SE Sec. 10-12-7.... Drilling 1,580 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, SE cor. NE SW Sec. 27-8-25w ..... Shut down 3,460 ft.

GREENWOOD COUNTY

Carnes & Bly's No. 1 Smith, NE cor. SE Sec. 4-24-13..... Dry and abandoned 1,801 ft.
Eureka Oil Co.'s No. 1 Brothers, SE cor. NW Sec. 35-23-11 ..... Drilling 2,489 ft.
C. A. Devine's No. 1 Bradford, SW cor. NE Sec. 22-26-11 ..... Shut down 600 ft.
Hanley and others' No. 1 Peterson, NW cor. NE SE Sec. 4-26-13 ..... Spudded.
C. E. Hawk's No. 1 Lessman, SE cor. SW Sec. 14-21-10... Dry and abandoned 2,197 ft. completed.
R. H. Hood and others' No. 1 Butler, C SE SE Sec. 15-26-11 ..... Drilling 650 ft.
T. C. Johnson's No. 1 Knox, NE cor. NW Sec. 8-23-13.... Shut down 1,705 ft.
Kismet Oil Co.'s No. 1 Richardson, SW cor. NE SW Sec. 26-22-11 ..... Location.
Rockhill and others' No. 1 Jones, SW cor. NE Sec. 21-26-13 ..... Rig.
Sharpless and others' No. 1 Corder, SW cor. SE SE Sec. 22-23-12 ..... Shut down 1,310 ft.
Smith & Rockhill's No. 1 McDair, NW cor. SE Sec. 20-26-12 ..... Dry and abandoned 1,903 ft.

HARPER COUNTY

Barbara Oil Co.'s No. 1 Blunk, C NW NE Sec. 20-34-13w.. Casing 2,760 ft.
Amerada Pet. Corp.'s No. 1 Mendiville, C SE SE Sec. 24-34-6w ..... Drilling 4,910 ft., crooked hole.
Sam Jarvis' No. 1 Wyckoff, SW cor. NW Sec. 11-34-4w.. Drilling 4,570 ft., flat hole.
Sam Jarvis' No. 1 Warneke, SE cor. SW Sec. 4-34-3w.. Shut down 4,207 ft.

HARVEY COUNTY

Roxana Pet. Corp.'s No. 1 Haury, NE cor. SW SE Sec. 11-23-2w ..... Rig.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ..... Rigged up and shut down

KINGMAN COUNTY

James Madison's No. 1 Ballein, SW cor. NW NW Sec. 21-28-5 ..... Drilling 3,610 ft.

LANE COUNTY

Robinson and others' No. 1 Dickerson, SW cor. NW SE Sec. 11-18-27w ..... Shut down 2,625 ft.

LINCOLN COUNTY

Pioneer Oil Co.'s No. 1 Chase, SE cor. SE Sec. 10-12-7.... Rig on ground.

LOGAN COUNTY

W. H. Koons', Trustee, No. 1 Edwards, NW cor. NW Sec. 14-14-33w ..... Corrected to 3,855 ft., dry and abandoned.

MARION COUNTY

Anderson Brothers' No. 1 Benth, SE cor. SW SW Sec. 31-18-5 ..... Dry and abandoned 2,680 ft.
Franks et al's No. 1 Wright, SW cor. NW NW Sec. 9-19-4 ..... Rig.
Givens and others' No. 1 Ucker, SW cor. NE Sec. 31-17-4 ..... Underreaming 1,820 ft.
Graham Bros.' No. 1 Nelson, NE cor. SE Sec. 30-17-5.... Sand 2,295-2,356. 200 ft. oil in hole. pulling big pipe.
T. C. Johnson's No. 1 Thompson, SW cor. NE Sec. 26-17-4 ..... Drilling 1,970 ft.
Raymond Gear's No. 1 Larson, NW cor. SW NW Sec. 18-21-4 ..... Spudded.
Sun Ray Oil Co.'s No. 1 Lehrman, SW cor. NE SE Sec. 1-21-4 ..... Drilling 3,209 ft.
Shearer & Reardon's No. 1 Strouse, SW cor. NW NE Sec. 14-18-4 ..... Rig.

MEADE COUNTY

Blackwell Oil & Gas Co.'s No. 1 Beyer, SE cor. NW SE Sec. 9-32-28w ..... 8-in. casing 3,205 ft.; total depth 3,315 ft.; cleaning out.

MORRIS COUNTY

Cress & Hawley's No. 1 Grendler, NW cor. SE Sec. 16-16-5 ..... Drilling 1,365 ft.
Hugh Faulder's No. 1 Wendt, SW cor. SE SE, Sec. 18-16-5 ..... Rig.
Fisher & Louck's No. 1 Stroda, NW cor. SE Sec. 6-16-5 ..... Dry and abandoned 2,659 ft.
Franks & Farrell's No. 1 Wendland, SW cor. SE NE Sec. 20-16-5 ..... Drilling 1,275 ft.
Graham Brothers' No. 1 Nelson, NE cor. SE Sec. 30-17-5 ..... Drilling 1,420 ft.
Matthews and others' No. 1 Walters, SW cor. NE Sec. 14-15-5 ..... Spudded and shut down.
Moss & Nelson's No. 1 Smith, SW cor. SW Sec. 18-16-5... Rig.

Comar Oil Co., Braman, Okla.
300,000 gallons, 60' to bottom.

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The LORRAINE SUCKER ROD RACK

Keep your rods safe and out of the way . . .

A crooked sucker rod isn't worth a dime. Bending induces fatigue of the metal with correspondingly high stresses that the rod isn't built to stand. Even a slightly crooked rod may cause a parted string—and the loss of a lot of time—not to mention money.

The Lorraine Sucker Rod Rack takes the stand as the elevator comes up and stows them safely out of the way, yet readily accessible for instant use. The rack hangs from the derrick crown—high up—and is handled entirely by the derrickman.

The sucker rods are held in a compact group—the rack is built in two sizes, for sixty or eighty-eight stands—and they are well out of the way of the crew and all operations on the derrick floor.

The Lorraine Rod Rack speeds up running in and pulling out. The elevator is not tied up while rods are being placed in the rack. The derrickman attaches the special hanger swiftly and at once releases the elevator for another load.

Increase *your* speed in pulling out and running in—and prolong the life of your sucker rods with the Lorraine Sucker Rod Rack.

The Lorraine catalog describes the Sucker Rod Rack and other Lorraine-built specialties in detail with pictures. May we send you a copy?

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Kern County Representatives:
New Method Pipe Slotting Company
Phone 465 Taft

Skelton and others' No. 1 Iles, NW cor. NW Sec. 25-16-5 ..... Rig.

McPHERSON COUNTY

Phillips Petroleum Co.'s No. 1 Wright, SW cor. NW NW Sec. 9-19-4 ..... Rig.
D. I. Hall's No. 1 Gray, NW cor. SE NW Sec. 20-20-3w ..... Spudded and shut down
John Heron's No. 1 Vosshell, NE cor. NE Sec. 9-21-3w ..... Spudded.
C. W. Lamer's No. 1 Lamer, SE cor. SW Sec. 1-17-3w ..... Underreaming 3,495 ft.
Gurley & Lamer's No. 1 Paulsen, SE cor. NW Sec. 6-19-3w ..... Drilling 1,000 ft.
The Texas Company's No. 2 Chinberg, NE cor. NE NW Sec. 32-18-2w ..... Sand 2,343-77; swabbing 25 bbls
Danciger Oil Co.'s No. 1 Willem, NW cor. SE SE Sec. 6-22-4w ..... Rig and tools.

OSBORNE COUNTY

Prather-Davis-Krueger's No. 1 Pruter, SW cor. SE Sec. 30-9-15w ..... Shut down 2,360 ft.

PAWNEE COUNTY

Frank Hopper and others No. 1 Seifers, NW cor. SW NE Sec. 23-21-11w ..... Drilling 4,160 ft.
F. C. Troupe's No. 1 Lovett, CEL NE NE Sec. 31-21-16w ..... Shut down 1,700 ft.

POTTAWATOMIE COUNTY

J. J. Crawford's No. 1 College, CWL SW NE Sec. 11-10-12 ..... Shut down 2,250 ft.

RENO COUNTY

Danciger Oil & Refining Co.'s No. 1 Williams, NW cor. SE SE Sec. 6-22-4w ..... Moved in tools.
Stearns-Streater & Marshall's No. 1 Crabb, SE cor. SW NE Sec. 1-25-8w ..... Rig.

RICE COUNTY

Allison & Fitswilliams' No. 1 Poland, NE cor. SW NE Sec. 36-19-8w ..... Cellar.

RILEY COUNTY

Mutual Oil Co.'s No. 1 Marks, SE cor. NE NW Sec. 26-10-6 ..... Shut down 3,400 ft.

ROOKS COUNTY

Keys Petroleum Co.'s No. 1 Rathburn, NE cor. SW Sec. 14-9-16w ..... Shut down 3,030 ft.
Krueger and others' No. 1 Poore, NE cor. NE Sec. 14-8-16w ..... Spudded and shut down.
Stearns & Streather's No. 1 Matheson, NE cor. SE NW Sec. 28-10-16w ..... Drilling 3,462 ft.

RUSH COUNTY

Valerious & Chenney's No. 1 Sheverman, NW cor. SE NW Sec. 27-17-17w ..... Spudded and shut down.

RUSSELL COUNTY

Douglas Oil Co.'s No. 1 Stoppel, SE cor. SW NE Sec. 25-14-11w ..... Rig.

SALINE COUNTY

Cress & Hawkey's No. 1 Grendier, NE cor. SE Sec. 16-15-5 ..... Rig.
Hugh Faulder's No. 1 Wendt, SW cor. SE SE Sec. 18-15-5 ..... Rig.
Mente Oil & Gas Co.'s No. 1 Muir, SW cor. SW Sec. 17-15-2w ..... Underreaming 3,205 ft.

SEDGWICK COUNTY

Bu-Vi-Bar Pet. Co.'s No. 1 Wright, SE NE SE Sec. 12-26-1w ..... Rig.

SEWARD COUNTY

T. B. Slick's No. 1 Pyle, NE cor. NE Sec. 14-33-33w ..... Shut down 3,200 ft.

SHERMAN COUNTY

A. L. Henson and others' No. 1 Murry, NE cor. SE NW Sec. 22-7-4w ..... Shut down 2,650 ft.

SMITH COUNTY

Smith & Buchner's No. 1 Rice, SW cor. SW Sec. 18-5-15w ..... Rig.

STRATFORD COUNTY

Randall-Johnson's No. 1 Richardson, NW cor. SW Sec. 24-22-11w ..... Spudded and then abandoned
Kismet Oil Co.'s No. 1 Richards, SW cor. NE SW Sec. 24-22-11w ..... Location abandoned.

SUMNER COUNTY

Otstot and others' No. 1 Barlow, SE cor. SE Sec. 22-33-3w ..... Shut down 1,860 ft.
Gypsy Oil Co.'s No. 1 Douglas, NE cor. SE NW Sec. 23-34-2w ..... Top Wilcox, 4,493 ft.; total depth 4,500 ft; estimated 200 bbls; shut down.

TREGO COUNTY

Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE Sec. 20-13-21w ..... Spudded and shut down

WABAUNSEE COUNTY

Empire Gas & Fuel Co.'s No. 1 Schuaem, SE cor. SE Sec. 19-12-11 ..... Fishing 3,320 ft.

LIST OF COMPANIES WHICH EXPORT CRUDE PETROLEUM AND ITS PRODUCTS FROM THE UNITED STATES
(Compiled during July, 1927)

Name and address—	Customs district from which exports are made
Allegheny-Seaboard Oil Corp., 11 Broadway, New York City	Baltimore
American Oil Co., American Oil Bldg., Baltimore, Md.	Norfolk
American Oil Works Co., Titusville, Pa.	Buffalo
American Trading Co., 25 Broad St., New York City	New York
Anglo-Mexican Pet. Co., 65 Broadway, New York City	Philadelphia
Anglo-Saxon Pet. Co., 901 Title Guarantee Bldg., New Orleans, La.	New Orleans
Asiatic Pet. Co. (N. Y.), Ltd., 65 Broadway, New York City	Baltimore
Associated Oil Co., 79 New Montgomery St., San Francisco, Calif.	Seattle San Francisco
Atlantic Oil Producing Co., 260 So. Broad St., Philadelphia, Pa.	Port Arthur, Tex.
Atlantic Ref. Co., 260 So. Broad St., Philadelphia, Pa.	Port Arthur, Tex. Baltimore Philadelphia Buffalo
Bahamas-Cuban Co., Jacksonville, Fla.	Tampa
George W. Beermaker, 322 West F Street, San Diego, Calif.	Los Angeles
Belcher Asphalt & Paving Co., 1217 No. Bayshore Drive, Miami, Fla.	Tampa
A. V. Berner & Co., 15-25 Whitehall St., New York City	Philadelphia
Bassick Manufacturing Co., Columbus, Ohio	Buffalo
Beck, Bres & Co., Eagle Pass, Tex.	San Antonio
Bowring & Co., 17 Battery Place, New York City	Baltimore
California Pet. Co., Security Bldg, Los Angeles, Calif.	Seattle
Camphuis & Co., Inc., Box 214, Eagle Pass, Tex.	San Antonio
The Canfield Oil Co., Box 673, Cleveland, Ohio	Buffalo
Carson Pet. Co., 208 So. La Salle St., Chicago, Ill.	New Orleans
D. W. Cass Co., Cleveland, Ohio	Buffalo
Chace Export Co., 15 Whitehall St., New York City	Boston
Chalmette Pet. Corp., 1320 Union Indemnity Bldg., New Orleans, La.	New Orleans
Cities Service Export Oil Co., 219 No. Broad St., Philadelphia, Pa.	Philadelphia
Chatham Pet. Co., 29 Beaver St., New York City	New York
Chelsea Oil & Supply Co., 17 Battery Place, New York City	New York
Frank W. Clarke, 29 Broadway, New York City	New York
Clarkson & Ford Co., 55 Water St., New York City	New York
Cooper Pet. Co., Houston, Tex.	San Antonio
Corning Oil Co., 321 Pearl St., New York City	New York
Crew-Levick Co., 219 No. Broad St., Philadelphia, Pa.	Buffalo
Crown Central Pet. Corp., Box 1805, Houston, Tex.	Galveston
Robert Cruikshank Corp., 11 Broadway, New York City	Buffalo
Damascus Mfg. Corp., 9501 Cassius Ave., Cleveland, Ohio	Buffalo
W. H. Daugherty & Son Ref. Co., Petrolia, Pa.	Buffalo
Deepwater Oil Ref. Co., Inc., Houston, Tex.	San Antonio
W. B. Dick & Co., Inc., 30 Church St., New York City	New York Baltimore
S. P. Drummond, 97 Water St., New York City	New York
Dutch Shell Line, Ross & Heyn, agents, 305 Baronne St., New Orleans, La.	New Orleans
Emery Manufacturing Co., Bradford, Pa.	Buffalo
Enterprise Oil Co., Inc., 104 Chandler St., Buffalo, N. Y.	Buffalo
Export Oil Co., Spring Arcade Bldg., Los Angeles, Calif.	Los Angeles
Export Pet. Co. of Calif., 541 So. Spring St., Los Angeles, Calif.	Los Angeles
Galena-Signal Oil Co., Franklin, Pa.	Buffalo
General American Tank Storage & Terminal Co., Union Indemnity Bldg., New Orleans, La.	New Orleans
General Pet. Corp. of Calif., Higgins Bldg., Los Angeles, Calif.	Seattle San Francisco
J. E. Gerrodette & Co., Inc., 17 Battery Place, New York City	New York
Gilmore Oil Co., 2423 E. 28th St., Los Angeles, Calif.	Los Angeles
Goldsmith & Co., 116 Broad St., New York City	New York

Fishing Tools Drilling Tools

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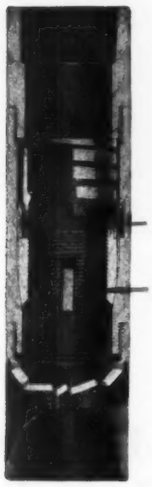
Why buy two or three Fishing Tools when---



Overshot with Standard Guide

A—Rubber packer makes a tight joint between "fish" and Overshot, assuring complete circulation of fluid thru the "fish."

B—Key rotates slips with Overshot.

All features are combined in the American? The American Releasing and Circulating Overshot will catch Drill Pipe, Coupling, or Tool Joint and will release from any point.

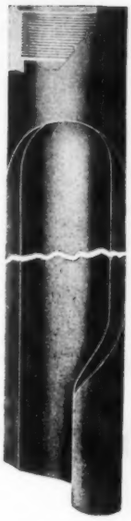
Notice the illustration. The slips, made with offset, work up and down together; it's impossible to make a fish without making the catch with both slips.

The slips are keyed in the bowl, and have left hand threads. A release is accomplished by rotating to the right.

The American Overshot will take the place of two or three fishing tools—saving you time and trouble. You can use the wall hook—or milling shoe—in place of your standard guide—and save many a run in and out of the hole.

The American Releasing and Circulating Overshot is FORGED STEEL THROUGHOUT.

Look over the list of American Oil Field Tools below. You'll find these tools in use among leading contractors and oil companies everywhere—and sold by the best supply companies in your locality. Write for the American Catalog of Oil Field Equipment—for description and details of the American line.



Wall Hook. Forged Steel. No Welds.

Slips. These slips are interlocking and work as a unit. It is impossible for the Overshot to grip the lost string of drill pipe without engaging both slips.

Milling Shoe. Type E. Teeth on Bottom and Inside. Made with heat treated cutting teeth on inside and bottom for use in milling off "fish" so that it will enter bowl of Overshot.

American Iron and Machine Works, Inc.

MANUFACTURERS OF OIL FIELD EQUIPMENT
OKLAHOMA CITY, OKLAHOMA

American Oil Field Equipment

American Releasing and Circulating Overshots
American Rock Bit Wrenches
American Milling Shoes
American Flexible Couplings for Rock Bit Lubricators
American Steel Tool Houses
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Rock Bit Cone Fishing Sockets
American Paraffin Bits
American Female Die Nipples
American Tapered Taps
American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Combination Reverse and Throttle Levers
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American Rock Bit Wash Pipe Attachments
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Attachments for Rock Bits
American Drill Pipe Float Joints

Three CP Duplex High-Pressure Compressors driven by Giant Gas Engines, flowing oil wells in Tonkawa Field.

CP Compressors, Oil and Gas Engines For Oil Field Service

OIL-FIELD EQUIPMENT:

Compressors for flowing of wells.
Vacuum pumps, condensers and Compressors for refinery service.
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Diesel engines 80 to 450 h.p.
Gas engines 90 to 270 h.p.
Portable Oil and Gasoline Engine-powered Air Compressors for cleaning wells and tank farm work.
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You can secure a CP Compressor to meet any oil-field requirement. There are more than 500 types and sizes, all thoroughly proven, for operation by oil and gas engines, belt or electric motor, in stationary, portable or semi-portable units.

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The Island Export Co., Keyser Bldg., Baltimore, Md.	Buffalo
Jenney Manufacturing Co., 12-18 India St., Boston, Mass.	Buffalo
Kendall Ref. Co., Bradford, Pa.	Buffalo
Kent-Middleton Ref. Co., Corsicana, Tex.	Portland
Patrick Levesque, Fort Kent, Me.	Buffalo
Malone Oil Co., Cleveland, Ohio	Buffalo
Mariand Refining Co., Box 214, Ponca City, Okla.	Galveston
F. A. Marsily & Co., Inc., 25 Beaver St., New York City	New York
Metasap Chemical Co., Harrison, N. J.	Baltimore
McColl Brothers, Ltd., Buffalo, N. Y.	Buffalo
McKean County Ref. Co., Bradford, Pa.	Buffalo
Mexican Petroleum Co., 120 Broadway, New York City	Portland
Mexican Pet. Corp. of La., Destrehan, La.	Tampa
Moore & Munger, 33 Rector St., New York City	New Orleans
Charles Murray, Calais, Me.	New York
National Oil Products Co., Harrison, N. J.	Portland
New England Oil Ref. Co., Fall River, Mass.	Buffalo
Newfoundland Import & Export Co., 187 Blackstone St., Boston, Mass.	Boston
New Orleans Ref. Co., Inc., United Fruit Bldg., New Orleans, La.	Boston
North American Car Corp., 607 World Bldg., Tulsa, Okla.	New Orleans New Orleans
The Oster Mfg. Co., 2057 E. 61st Place, Cleveland, Ohio	Baltimore
Pan American Pet. Co., Tenth and Flower Sts., Los Angeles, Calif.	Los Angeles
Pan Pacific Oil Co., 524 Board of Trade Bldg., Los Angeles, Calif.	Los Angeles
M. W. Parsons and Plymouth Organic Lab., New York City	Buffalo
Pennsylvania Refining Co., Karns City, Pa.	Buffalo
The Pennzoil Co., Inc., Oil City, Pa.	Buffalo
Peoples Wood, Coal & Coke Co., 506 Oak St., Tampa, Fla.	Tampa
Petroleum Export Association, Inc., Houston, Tex.	Galveston
Petroleum Import & Export Co., New Orleans, La.	New Orleans
Pierce Petroleum Corp., 420 Olive St., St. Louis, Mo.	San Antonio
Pioneer Oil Ref. Co., San Antonio, Tex.	San Antonio
Primrose Pet. Co., Inc., San Antonio, Tex.	San Antonio
Pure Oil Co., 61 Broadway, New York City	Buffalo Baltimore Port Arthur New York Portland Buffalo
Putnam Brothers, Ltd., Houlton, Me.	Buffalo
Quaker Oil Products Corp., Conshohocken, Pa.	Buffalo
Quaker State Oil Ref. Co., Oil City, Pa.	Buffalo
Redex Oil Co., Warren, Pa.	Baltimore
Richard Shipping Corp., 29 Broadway, New York City	Los Angeles
Richfield Oil Co., Bartlett Bldg., Los Angeles, Calif.	New York
Robinson-Patterson Oil Co., 29 Broadway, New York City	San Antonio
Russell Oil Co., San Antonio, Tex.	Baltimore
A. E. Ryan & Co., Cunard Bldg., New York City	Philadelphia
H. A. Saffer, 61 Broadway, New York City	Seattle
Shell Company of Calif., 200 Bush St., San Francisco, Calif.	Los Angeles San Francisco
Sherwood Brothers, Inc., 809 Continental Bldg., Baltimore, Md.	Baltimore
Sinclair Ref. Co., 45 Nassau St., New York City	Philadelphia Norfolk Houston
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Smith & Nichols, 121 Maiden Lane, New York City	New York
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Standard Oil Co. of Calif., 225 Bush St., San Francisco, Calif.	Seattle Los Angeles San Francisco
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The Texas Company, Houston, Tex.	San Antonio Seattle
Texas Mexican Oil Ref. Co., Laredo, Tex.	Los Angeles
Tiona Petroleum Co., 1130 Widener Bldg., Philadelphia, Pa.	San Francisco
Trueba & Pardo, Piedras Negras Coah, Mexico	Buffalo
Union Oil Co. of Calif., Union Oil Bldg., Los Angeles, Calif.	San Francisco Philadelphia Buffalo Buffalo Los Angeles San Francisco
Union Oil Co. of Pa., Warren, Pa.	Baltimore
Vacuum Oil Co., 61 Broadway, New York City	Buffalo Los Angeles New Orleans Buffalo Boston Buffalo
Waldo, Egbert & Maltby, Inc., Liberty Bank Bldg., Buffalo, N. Y.	
Western Oil & Ref. Co., 416 West Eighth St., Los Angeles, Calif.	
West India Oil Co., 26 Broadway, New York City	
West Penn Oil Co., Warren, Pa.	
Wilshire Oil Co., 2455 E. 37th St., Los Angeles, Calif.	
W. E. Winship, Whitney Bldg., New Orleans, La.	
Wolverine Lubricants Co., Inc., Reno, Pa.	
W. A. Wood Co., 373 Atlantic Ave., Boston, Mass.	
York Oil & Chemical Co., York, Pa.	

TEXAS PIPE LINE CO. ENTERS GRAY COUNTY

FORT WORTH, Tex., Apr. 7. — The Texas Pipe Line Co. has started construction work on approximately 40 miles of pipe line to care for The Texas Company's production in Gray County. The main gathering system will start from Kings Mill near the west central line of Gray County and will extend east to the Bowers, Saunders and Chapman Pools. The Texas Company has production in the former pools and the Chapman Pool is controlled by The Texas Company as defined by present production.

The main gathering system will be built with 8 and 6-inch pipe, and 5-inch laterals will be built. A 6-inch delivery line will be built from Kings Mill to Panhandle. Deliveries will be made to the Gulf Pipe Line Co. at Panhandle and the crude will be pumped south to Ranger through the Gulf's main line and delivered to the Texas Pipe Line Co.'s main line at Ranger.

ASCO STEEL
STANDS SUPREME

Our metallurgists are men who have had first hand experience in the Oil Fields. They have studied the performance of Oil Well Tools under the most trying conditions. Asco Steel is being produced to meet these conditions and the increasing demand has proven all that we claimed for it.

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THE ANDREWS STEEL CO.
NEWPORT KENTUCKY

Nobody likes to scrub!

SCRUBBING and scraping salvage parts to get them clean is a job nobody likes. It is tedious, time-consuming and costly. And, when gasoline or distillate is used, involves a fire hazard as well.

A far easier and safer way to clean is with Oakite materials —let *them* do the scrubbing. By *soaking* equipment clean in an Oakite solution you save time, reduce labor and eliminate fire risks entirely. Oakite cleaning is SAFE, thorough and speedy.

One of our Service Men will be glad to point out its advantages. Ask to have him call or write for "Oakite in the Oil Industry," a practical cleaning booklet full of money-saving suggestions. No obligation either way.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the U. S. and Canada.

Oakite is manufactured only by
OAKITE PRODUCTS, INC., 44C Thames St., NEW YORK, N. Y.

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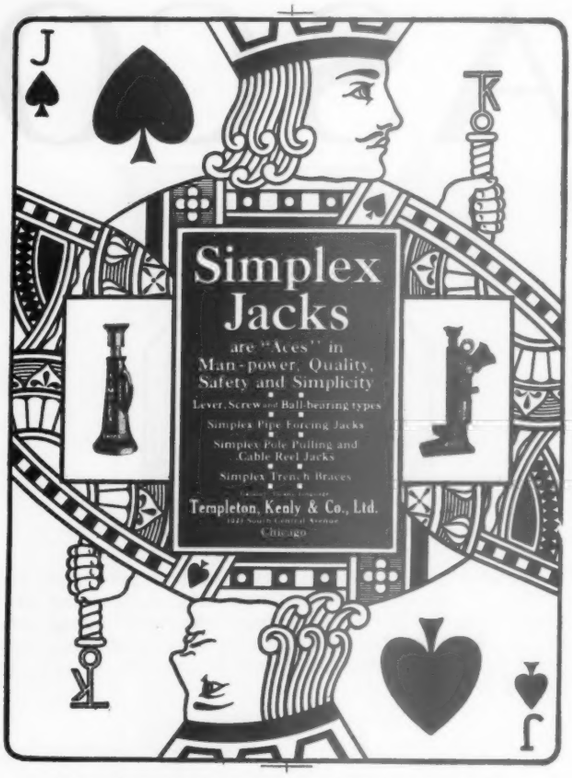
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods



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Simplest and most complete —Type "M-2-S" rig lighting unit

THIS new Pyle-National turbo-generator is equipped for service in the field with a built-in safety switch and fuse box, making installation and operation easier than ever before. The switch and fuse box prevent accidents, protect against short circuits and damage to the unit, and make operation and installation as simple and complete as the best of shop jobs. Type "M-2-S" will operate anywhere you have steam, has ample capacity for floodlights as well as a string of incandescent lamps, and runs longer without maintenance attention than any other type.

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Pipe Prices Advanced; Oil Country Goods Expected to Follow

By B. E. V. Luty

PITTSBURGH, Pa. Apr 9.—Recent rumors that pipe mills might possibly attempt to advance prices were not very seriously regarded in the trade, but are now being borne out by the fact that the Youngstown Sheet & Tube Co. has announced a 5 per cent advance on all its pipe, including line pipe, but making no mention of regular oil country goods. The Youngstown company's announcement is of course in the form of a withdrawal of the additional per cent preferential, which was formally recognized by the pipe mills about October 1, 1927, after there had been irregular shading for some time previous. On black pipe a 5 per cent advance ranges from $3.40 per net ton on 1 to 3-inch to about $4.25 on 11 and 12-inch, and on galvanized from $4.25 on 1 to 3-inch upwards. It would be confusing to quote the preferentials in detail, as the pipe mills make distinctions between different classes of trade. What they commonly admit is one point and two fives, whereby the advanced price would be one point and five, i.e., where the card discount is 62 per cent the price would be 63 per cent and 5 per cent, but as a matter of fact there are preferred jobbers who are accorded a discount beyond that here mentioned.

The other pipe mills will presumably follow the Youngstown Sheet & Tube Co.'s lead, or the company would not have taken the action, which could not be sustained by one producer, in competition.

In the general price advancing movement which extended over several months, the last advance having been in bars, shapes and plates some six or seven weeks ago, all important finished steel products were included except rails, pipe and tin plate. These advances have not yet become the full market, but they served a useful purpose in driving in tonnage at old prices or at partial advances, whereas in pipe there has been scarcely any forward buying. The marking up of pipe prices may represent an effort to accumulate a backlog of tonnage, or it may represent an effort to straighten out the secondary market, as jobbers in some sections have been shading prices for several months.

Naturally an advance in oil country goods is to be expected, now that a start has been made with standard pipe. Last year's decline in oil country goods was 10 per cent, against 5 per cent in standard pipe. There is a difference, however, in that there are only a few preferred jobbers in oil country goods whereas there are many in standard pipe.

Demand for oil country goods remains light. Demand for standard pipe continues its slow seasonal improvement. It is slightly below that of a year ago and still more below that of two years ago, but on the whole there is not a great deal of difference.

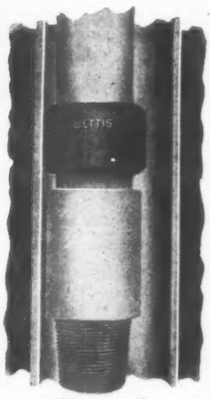
The steel market as a whole is in decidedly quiet position. Few important projects are coming out. Large buyers are well covered by contracts in the various finished steel lines, in bars, shapes, plates, strips, sheets, wire, etc, apparently by first quarter contracts having been extended in various cases, the full advanced prices not being demanded. The steel mills have really secured little tonnage at substantial advances, despite the various announcements of marking up of prices, but they have secured something, and they have avoided a further decline.

Steel production is at close to the high rate of March, and little decrease is expected for a time. According to precedent, production would decrease after March and there is no reason to expect this year to make an exception. The automobile industry is running better than a year ago, there has been a little more fabricated structural steel business placed in the year to date than a year ago, and the agricultural implement industry is running very well. Otherwise there is probably somewhat lighter consumption.

no more *twist offs* caused by friction

More twist-offs occur by reason of friction of drill string against casing than by any other cause. Bettis Casing Protectors relieve this friction by providing a line of cushioned rubber, mud-lubricated bearings from cellar to bit. String rotates easier, faster; no wear on casing or string. Save every way. Cost less than any other Protector.

Worth looking into.



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3769 Moneta Avenue
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Trouble Proof! Improved

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You can forget your Wico Magneto for months at a time. You're not abusing it, for it's self-lubricating and needs no adjustment. It literally oils itself, thus relieving you of a bothersome responsibility.

The improved Wico was tested in our laboratories for a full year, then operated under oil field conditions for eight months. Finally the Wico engineers were satisfied and the new Magneto was announced. Since then, leading oil companies have standardized on the improved Wico to eliminate trouble and save expense.

This Feature Can Be Added to Your Present Wicos

Your present Wico Magnetos can be converted to the new style the next time you send them to Tulsa.

And the charge is only one dollar.

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We will gladly give you the whole story on the improved Wico and tell you about converting old models if you will fill in and mail this coupon to us.

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Please send me full information on the improved OC WICO MAGNETO and details on converting old models.

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Pumps for the Oil Industry

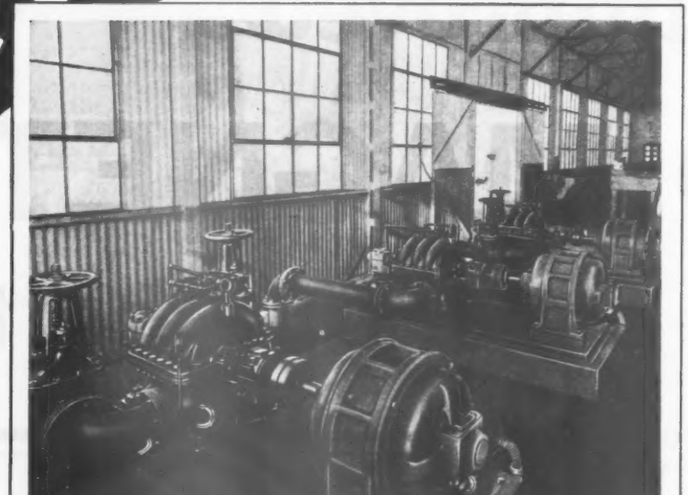

Figure 1696
Goulds Single-Acting Triplex Pump

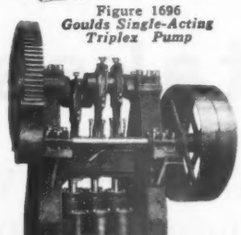

Figure 1671
Goulds Single-Acting Triplex High Pressure Pump

Down in the "Panhandle" section of Texas, you will find many Goulds Pumps giving faithful service under a wide variety of uses. They are built to carry high pressures, to give high maintained efficiency and to stand up through the grind of continuous day-after-day operation—sufficient justification for their use by many of the largest producing companies in the oil industry.

The battery of Figure 3330—3-stage Centrifugals, in the above illustration, shows just a few of the Goulds Pumps in the gasoline plant of one of the big Texas oil companies.

Write our engineers for further information on Goulds Pumps for the oil industry, or send for oil pump Bulletins 126 and 130, compiled by Prof. Robert L. Daugherty, and "Petroleum Industry and Pumps Used," printed by Lefax.

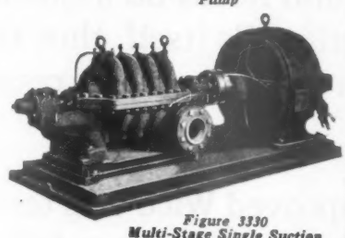

Figure 3330
Multi-Stage Single Suction Centrifugal Pump

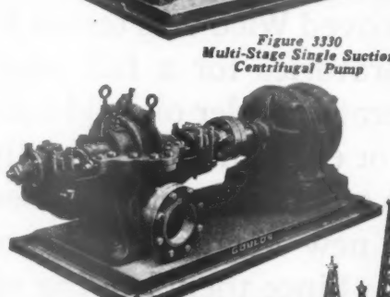

Figure 3065
Single Stage, Double Suction Centrifugal Pump

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705 Kennedy Bldg.

GOULDS PUMPS

SOUTHWEST WILDCATS

(Continued from Page 49)

Miears well is running about 75 feet higher than the Reiter-Foster well and if it fails to pick up production in the Serpentine in sufficient quantity has a good betting chance to go on down to the Edwards lime.

Schawe Wildcat Stirs Interest

Another wildcat that got attention last week in Southwest Texas is the Louis P. Schawe's No. 1 Ted Schawe, about 8 miles west of Lockhart and also in Caldwell County. It topped the chalk at 699 feet and has considerable gas. Compared with two wells in the same survey drilled by Payne & Bond it is running about 100 feet high. It found a little Serpentine scattered in the core taken from the chalk. The indications of a high long and the showing of gas described as sufficient to put the drilling fluid up over the rotary table is encouraging the owner that there may be production in the Edwards. It is approximately 12 miles northwest of the Luling Field.

There are a few new wildcats starting over the country, about enough to keep the general amount of drilling the same all the time. Some San Antonio people under the name of Wolf Creek Oil Co. are about to start a test a little south of the Guadalupe County end of the Luling Field, on a location and on geology worked out by Bertrand de Graffe.

In the Laredo territory eight new locations were made the past week. Partee and others made a location for No. 1 Hahl in Block 16 of Survey 78 in northwestern Duval County near the Schlessinger well and the Trussell, trustee, well, each of which got considerable oil. Other new locations were in proven territory and of no particular significance.

In the Corpus Christi area National Oil Co.'s No. 1 Sullivan at 2,330 feet in western San Patricio County is shut down in order to put on a control head as a precaution against a gas blowout, the well being in a county noted for such occurrences.

Duval County

National Oil Co.'s No. 1 Ball, Survey 16, located 450 feet to north line and 150 feet to east line, is standing at 2,212 feet. Houston Oil Co.'s No. 1 Woods-Welder, Survey 233, located 1,750 feet to west line and 100 feet to north line, is drilling 2,890 feet.

Hidalgo County

Queen City Oil & Gas Co.'s No. A-1 (not No. 2 as reported), Adams Survey 82, located 2,640 feet to north line and 1,320 feet to east line, has set 10-inch casing at 60 feet. D. L. Smith Oil Co.'s No. 5 Fernandez, Porcion 46, Block 34, is drilling at 3,300 feet.

LaSalle County

Southwestern Petroleum Co.'s No. 1 H. Beckwith, 1,320 feet south of Nueces River and 1,388 feet to northwest line of Survey 19, had sand at 165 feet showing water, second at 400 feet and is now drilling at 660 feet.

Jim Hogg County

M. I. Shaw and others' No. 1 Jones, Survey 381, Block 12, located 486 feet to west line and 171 feet to south line, is standing at 2,004 feet.

Starr County

The Texas Company's No. 1 M. Guerra, Porcion 68, Block 91, located 1,000 feet to east line and 150 feet to south line, is drilling at 760 feet with gas showing at 256-60 feet in sand; No. 1-A V. Guerra, Porcion 68, Block 92, located 150 feet to south and east lines, is drilling at 157 feet (previous report in error). J. V. McAleese and others' No. 1 Hicks & Hicks, Perdernal grant, 150 feet to northeast lines and southeast lines, has spudded in and set 12½-inch casing at 100 feet. Kusch Exploration Co.'s No. 1 Frank Doyno and others, Porcion 75, Block 13, is drilling at 747 feet. J. E. Harston and others' No. 1 H. Guerra, Survey 43, located 660 feet to south line and 1,320 feet to east line, is shut down at 1,120 feet.

Zapata County

Hill, Reiser & Weed's No. 1 H. Rodriguez, Block 1, of the R. V. Hill Subdivision, 870 feet to northwest lines and 450 feet to northeast lines, is moving on.

Bexar County

Allen Burnam's No. 1 Ward, A. A. Gardiner Survey, southwest of Martinez, is drilling at 1,037 feet in Taylor marl. Larsen-Walsh and others' No. 1 Oppenheimer, Survey 180, located 330 feet to south line and 330 feet east of center of survey, is drilling at 1,775 feet, probably in the Eagleford. C. J. LeCompte's No. 2 Diaz, Survey 32, Block 3,283, located 450 feet north of No. 1, is shut down at 72 feet on rock. F. H. Meyers' No. 1 B. Biering is rigging up.

Bastrop County

J. F. Miller Drilling Co. has taken over the No. 1 Ed Jones, formerly of B. W. Owens, 2 miles northeast of Cedar Creek, and is preparing to spud in. Rundus & Landua's No. 1 Frank Rundus, Bartens Creek and Smithville-Cistern Road, and 12 miles southwest of Smithville, is moving on.

Bee County

D. Hewitt's No. 1 R. A. Ray, 1½ miles northeast of Pettus, is standing at 2,410 feet waiting on orders; No. 1 Schultz is drilling at 1,200 feet. Red Ant Oil & Gas Co.'s No. 1 Perry & Chesnut, B. Q. Hadley Survey, 6½ miles west of Pettus, is at 1,200 feet in tough gumbo.

Blanco County

C. W. Bates' No. 1 Herman Massey, Henry Manton Survey, 920 feet to north line and 660 feet to west line of survey, is at 214 feet fishing for tools in hard gray limestone. Robert Rodson's No. 1 Glasscock, Survey 50, located 150 feet to CEL at 435 feet is moving in cable tool rig to get through rock.

Caldwell County

Joe Bruner and associates' No. 1 W. F. Davis, north of Luling, at 2,688 feet is coring and testing, still in the Austin chalk, and on two successive days swabbed 30 bbls.; No. 1 Wilson, A. Floyd Survey, about 400 feet north of No. 1 Davis, is standing, waiting outcome of the other well. Louis P. Schawe's No. 1 Ted Schawe, Thomas Maxell Survey, 6,111 feet to southeast lines and 6,986 feet to northeast lines of survey, at 769 feet is in top of chalk and showing considerable gas. Trinity Drillers' No. 1 Miears, C. M. Cannon Survey, southwest of the Dale Field about 1½ miles, at 1,999 feet total depth, has 30 feet of Serpentine from 1,960-96 and little oil. Well is running higher than the Reiter-Foster No. 1 Brown.

DeWitt County

Durbin Oil Co.'s No. 1 Gohmert, G. W. Brooks league, 175 feet to north line and 300 feet to east line, is shut down at 3,013 feet. H. T. Roe's No. 1 Lienhard, D. J. Bibb Survey, southwest corner, is standing at 950 feet and is reported will resume soon.

Dimmitt County

Humble Oil & Refining Co's No. 2 City National Bank, Survey 23, located 150 feet to north line and 860 feet to west line, is drilling at 200 feet.

Frio County

Karnes and others' No. 1 J. J. Little, B.S.&F. Survey No. 2, located 340 feet to east line of survey and 300 feet south of Medina-Frio County line, is shut down at 607 feet. Blue Bonnett Oil & Gas Co.'s No. 1 Edwards (formerly F. A. Lain and taken over recently by the Blue Bonnett, a recently organized local company), Hooper & Wade Survey, 920 feet to center north line, has resumed drilling at 1,250 feet.

Gonzales County

W. D. Flynn's No. 1 Wilhausen, S Bateman Survey, east central part of the lease, is drilling at 1,900 feet. W. G. Malone's No. 1 Mrs. D. G. Staton, 3½ miles south of Slayden, is drilling. The Texas Company's No. 1 Denman, A. Zumwalt Survey, 100 feet to south and west lines, is drilling at 457 feet in hard sand. L. P. Unkel's No. 3 Johnson in the shallow Slayden Field is down 1,500 feet.

Jackson County

J. B. Douglas' No. 1 C. O. Lowrance, 12 miles northwest of Edna, has not yet spudded in and is drilling water well.

Guadalupe County

J. M. Rentz' No. 1 Siligman & Freeman, Gustavus Chotwell Survey, 1,100 feet to southwest lines of farm and survey and 1,300 feet to southeast lines of farm, is drilling at 690 feet with no chalk yet.

Hays County

J. E. Rodgers' No. 1 Earnest Hohenburg, 2½ miles east of San Marcos, at 2,189 feet installed new tubing and swabbed a little oil.

Jim Wells County

Cushing Oil & Gas Co.'s No. 1 M. Perez, La Tinaja Survey de la Lara grant, 600 feet to north and east lines of survey, is drilling at 820 feet.

Kerr County

Walker-Van Duyn's No. 1 Barfield, B. B. Peck Survey, 4,700 feet to north line and 450 feet to east line, is shut down at 2,100 feet.

Live Oak County

Houston Gulf Gas Co.'s No. 2 Lark, E. W. B. Scrugham Survey, 155 feet to east line and 100 feet to north line, spudded in and set two joints of surface casing. War. Wood Hunt's No. 1 McNeil, Jane Curry Survey, tested salt water at 2,137 feet and is drilling deeper.

Medina County

R. P. O'Brien's No. 1 Nixon, Survey 531, located 1,945 feet to west line and 833 feet south line, at 1,080 feet has made arrangements to pump well. Yantis and others' (formerly Carl Brothers) No. 1 Saathoff, Gerhard Ihnken Survey No. 40, located 155 feet to south and west lines of survey, has derrick up.

Maverick County

Ryan Consolidated Petroleum Co.'s No. 1 Indio, Survey 14, center is drilling at 4,400 feet in lime. Rycade Oil Corp.'s No. 1 Chittim, Section 129, Block 7, is shut down at 4,295 feet; No. 2 Chittim, Section 158, Block 7, is drilling at 4,180 feet in lime.

San Patricio County

Harry Carter's No. 1 Mayfield has derrick up. Houston Gulf Gas Co.'s No. 2 Waelder, Calixto Survey, east central part of the lease, is drilling at 1,125 feet. National Oil Co.'s No. 1 Sullivan, J. C. McMullen Survey, 500 feet to southwest corner, has resumed drilling at 1,805 feet. George B. Pickett's No. 1 Whitworth, NW NW Section 60, is drilling at 3,000 feet in hard formation; No. 1 Garrett is shut down at 3,030 feet. John Sigmund's No. 10 well, 60 feet south of No. 9 at 1,900 feet bailed drilling and is deepening.

Travis County

T. P. Garrett's No. 1 Paul Rowe, R. Hornsby Survey, 900 feet to north and east lines, shut down at 1,025 feet in top of Edwards lime with sulphur water. W. J. Hill's No. 3 fee is shut down at 400 feet.

Uvalde County

Pure Oil Co.'s No. 1 J. D. Smythe, Survey 687, located 740 feet to north line and 146 feet to east line, is in Edwards at 2,231 feet with sulphur water.

Victoria County

J. J. Elam's No. 1 Vol Kutchka, 200 feet to CNL of Section 40, is at 1,420 feet with hole caving.

Val Verde County

Valvert Oil Corp.'s No. 1 (formerly carried as T. W. Callahan and associates) NW Section 47, Block Y, is moving on. East Del Rio Oil Co.'s No. 1 Russell, Section 183, is shut down at 3,325 feet. Independent Operators' No. 1 Whitehead, SE SE Section 30, Block 4, is shut down at 3,900 feet. Magnolia Petroleum Co.'s No. 1 Whitehead, Section 81, is drilling at 6,530 feet. O. O. Owens and others' No. 1 Mills, Section 128, Block 1, is shut down at 4,210 feet. W. V. Traves' No. 1 Wilson, Section 115, is shut down at 905 feet.

CANADIAN FIELDS

(Continued from Page 51)

rigged up ready to spud in; they will start drilling before the end of April.

McLeod Oil Co. recently made a 24-hour production test of Nos. 1 and 2 deep lime producers, LSD 16, Section 1-20-3w5, but the results have not yet been given out. It is understood, however, that McLeod's No. 3, same LSD, which has been producing from the Blairmore-Dakota sand at 3,280 feet, will this spring be continued to the deep lime; McLeod's No. 4, same LSD, is drilling below 380 feet.

Deepest Producer

Vulcan Oils' No. 1 producer, LSD 11, Section 13-20-3w5, is reported still frozen; this well has now been out of production for several weeks, and difficulty with freezing is expected until the hole is cleared of the tools lost when the well was brought in more than a year ago. Vulcan's No. 1 is the deepest producer in the field; its location was on the syncline between the two folds of the Turner Valley anticline, and it got its crude naphtha production in the deep lime at 5,004 feet. The well was good for around 110 bbls. a day when in production. Spooner Oils' No. 1, LSD 12, Section 13-20-3w5, which got production at 4,930 feet, is still frozen; the initial show indicated a possibly better production than Vulcan's No. 1. Vulcan's No. 2, LSD 11, Section 13-20-3w5, is reported drilling around 4,900 feet and should be close to the deep production.

Illinois Alberta Oils' No. 1, LSD 14, Section 12-20-3w5, for the week ending March 24, reported a production of 639.6 bbls. of crude naphtha, averaging about 91.4 bbls. a day. Illinois-Alberta's No. 2, same LSD, is at 1,743 feet and drilling. New McDougall-Segur's No. 3 Blairmore sand test, same LSD, is drilling at 1,870 feet after running a string of 10-inch casing.

Seneca Oils, LSD 1, Section 34-20-3w5, in the north end of the field is around 3,800 feet and drilling; a small strike of dark green crude was recently encountered, apparently at the Benton-Blairmore contact. This indicates that the structure in the Seneca section of the north conforms to that in the south end of the field where similar small oil shows are met at this contact; though in the north this horizon is much deeper than in the central and southern sections of the field.

British Dominion Oil Development Corp., LSD 4, Section 5-20-2w5, is reported at 6,580 feet and drilling.

Sentinel Oil Co., Section 8-20-2w5, is reported at 4,000 feet and waiting for casing.

Model Oils, LSD 8, Section 22-20-3w5, is working on camp and has ordered derrick timbers. Drilling will likely start early in May. A cable tool outfit will be used. The section of the Turner Valley to be tested by this well was favorably reported on by Dr. G. S. Hume of the Geological Survey of Canada in his most recent report on the field; it is in the northern end of the field but somewhat south and a little east of Stockmen's No. 1 gasser.

Alberta Development

Alberta Pacific Consolidated Oils, Ltd., is reported arranging to secure additional acreage in the various Alberta fields. Active geological work will be carried on in various areas with a view to selecting potential oil acreage; and a shallow drilling campaign for purposes of geological information will be carried on in the border areas of Albeta. Information secured by this shallow drilling will be used in locating commercial tests, to be drilled either by the company itself or by other interests on a royalty basis. It is possible the Alberta Pacific Consolidated will later in the year undertake one or more tests; but in the meantime negotiations are being carried on with other companies for drilling its border acreage on a royalty basis. Alberta Pacific Consolidated Oils, Ltd., was organized in the later days of the first Calgary oil boom, being a merger of five smaller companies. Some drilling at that time proved unsuccessful, but the company has since then kept its leases in good standing and from time to time acquired additional acreage. The company's capitalization consists of 5,000,000 shares of $1 par value, of which 1,528,000 have been issued. Of its holdings in the Turner Valley, some 120 acres were leased some years ago to the Home Oil Co. on a royalty basis. Last year this acreage and 80 acres additional was taken over by the Home Oil Co. in exchange for $200,000 cash and 150,000 shares, representing a one-fifth interest, in the Home company. The latter has a substantial interest in the Home Oil Distributors, Ltd., a recently organized re-

fining and marketing company with headquarters at Vancouver, British Columbia. Alberta Pacific Consolidated Oils, Ltd., still holds 280 acres in the Turner Valley, of which 40 acres have been leased to the Dallas Oil Co. on a drilling royalty agreement. The company also holds a total of 5,582 acres in the Wainwright, Jumping Pound, Williams, Sarcee, Milk River and Coutts areas; development of the two last-named areas is now being negotiated.

The Highland Oil Co. operating in the Turner Valley Field has entered a petition for winding up the company; as a preliminary to distribution of the company's assets. The Highland company's acreage, unfinished well and equipment were taken over by the Regent Oil Co. in exchange for 353,906 shares of Regent stock; which the Highland company is free to dispose of when the Regent test in LSD 16, Section 1-20-3w5, now drilling around 2,500 feet, reaches the top of the deep lime.

In the Waite Valley section of the Turner Valley area, Stellar Oils, Ltd., has located a test in LSD 10, Section 25-20-4w5. The camp has been completed and derrick timbers are being hauled to the site.

In the DeWinton district, Anglesey-Lakeview No. 1, Rowland Ness farm, LSD 1, Section 22-21-1w5, is drilling in a very hard formation at 2,721 feet.

Moose Mountain

In the Moose Mountain district, Signal-Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, is reported to have resumed drilling at 1,879 feet, after running 8-inch casing to the bottom of the hole.

Shareholders of the Cherokee Oil & Refining Co. held their annual meeting at Calgary recently. This company has an unfinished test in LSD 7-8, Section 33-23-5w5, in the Moose Mountain Field; resumption of this test at 1,894 feet is being delayed pending the result of litigation with the drilling contractors. As soon as this litigation is disposed of a shareholders meeting will be held to discuss further development work. The company owns 800 acres in the Moose Mountain and Rickert district. Directors were re-elected as follows: President, R. J. Dick; vice president, J. Rockley; secretary-treasurer, H. E. Hunt; directors, J. F. Dale, J. R. Hammill.

In the Skiff Field, southern Alberta, a new drilling program has been arranged between Imperial Oil, Ltd., and Devenish Petroleum, Ltd. Under this program two tests will be completed by Imperial Oil, Ltd, on the Devenish acreage this year, and four additional tests before October, 1930. O. G. Devenish will, it is understood, have charge of the field operations, under the general direction of J. H. McLeod, western production manager of Imperial Oil, Ltd. Two combination rotary-standard drilling outfits are, it is reported, being moved to the field, together with other necessary equipment; and drilling will start as soon as possible. The two locations are being made by O. G. Devenish of Devenish Petroleum, Ltd, and T. A. Link, chief geologist of Imperial Oil, Ltd., and work on the derricks will start as soon as the location stakes are driven. Both tests will be drilled to the production horizon encountered in Devenish Petroleum No. 1 between 3,065 and 3,090 feet. The rotary will be used to the top of the sand, after which the rotary mud will be cleared from the hole, the string cemented and the hole drilled in with standard tools. No. 1 producer was located in LSD 5, Section 27-5-14w4; and No. 2 will probably be located fairly close to No. 1 but a little higher on the structure. No. 1 has a flush production around 250 bbls. a day of 20.2 gravity crude.

In the Pincher Creek district, southwestern Alberta, Alberta Gas & Fuel Co.'s No. 1 Doherty, Section 34-2-29w4, is reported drilling below 1,000 feet, after running casing to the bottom of the hole The test recently made 400 feet of hole in four tours, or 48 hours drilling. A drilling contract is being arranged for Doherty No. 2 which will be drilled about 6 miles south of Pincher Creek near the Thibaudeau ranch.

Mount Royal Oil & Gas Co.'s No. 1, LSD 4, Section 7-6-1w5, is reported still shut down at 1,000 feet. The company recently made a proposition to the town council of Pincher Creek to pipe the gas to that town; a 6-inch line is contemplated, and a tentative rate of 65 cents per 1,000 feet is under consideration. The Mount Royal Oil & Gas Co. is backed by Shelby, Mont., interests, with W. M. Fulton, R. E Smith and Louis Lilley as directors; the latter is secretary treasurer and general manager and the office of the company is at Lethbridge, Alberta. The company's capitalization is $300,000.

Red Coulee

In the Red Coulee district west of Coutts, Ko-Top Oils, Ltd., SE Section 2-1-17w4, will spud in about May 1. The location is 1½ miles west of the Imperial Oil, Ltd. Red Coulee well, LSD 6, Section 5-1-16w4, which some years ago got a good show of oil but had to be abandoned at 2,706 feet on account of water. No further tests have been drilled on this structure, which is thought to be a northwesterly extension of the Kevin-Sunburst. The area was reported on for the company by T. B. Williams, who located the test at a high point on the structure and looks for possible production at comparatively shallow depth. W. J. Douglas of Calgary is president and managing director of the company. In addition to 405 acres in the border district, Ko-Top Oils, Ltd., holds a 20-acre tract in the Turner Valley Field. Alberta Pacific Consolidated Oils, Ltd., holds extensive acreage north of the Ko-Top holdings in the Red Coulee area and will probably drill some shallow tests this spring to define the structure.

Lethalta Oils, Ltd., has located a wildcat test in Section 33-8-18w4, just south of Chin, and is moving a rotary outfit and casing from the Wainright Field. Arthur Mewburn of Edmonton will have charge of the test. The Lethalta Oils No. 1 is 23 miles due north of the Gas Production & Transportation, Ltd., test in the Warner area and on the same geological structure. The latter test, in NE Section 21-4-18w4, has resumed drilling at 3,340 feet after setting and cementing the 8-inch casing.

Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary has ordered two cable tool outfits for use in the border fields, where two or three tests will be drilled this season. No definite locations have yet been made, pending the results of core drilling being carried on in several areas with a portable diamond drill outfit. It is reported that the Canadian Western company is pulling casing from its No. 3 gasser near Nemiskam.

In the Ribstone-Blackfoot area, east central Alberta, Dave Credille has resumed work on the rotary test of the London-Ribstone syndicate in LSD 14, Section 10-43-3w4, near Dunn. The test has been shut down for the winter around 2,000-foot depth, and is close to one potential oil sand. In the Wainwright Field, the National Exploration Co., LSD 1, Section 30-45-6w4, which got some gas at 2,340 feet, is reported to have finished its test at this depth. The outfit is being shipped to southern Alberta for the Lethalta Oils, Ltd., test near Chin.

Marland Tar Sand Process

A project for the mining and development of the Athabaska tar sands of northern Alberta on an extensive scale will, it is reported, be undertaken this season by the Hudson's Bay-Marland Oil Co., acting in co-operation with the federal Department of the Interior and the provincial governments of Alberta and Saskatchewan. The Hudson's Bay-Marland Oil Co. has, it is stated, acquired six townships in the tar sand area, extending for a distance of 36 miles along the Athabaska from Fort McMurray; a special concession being granted by the federal government to facilitate this development. The project contemplates the mining annually of 1,000,000 tons of tar sand, utilizing the river for transportation purposes. The major portion of the oil will will be extracted and refined, and the residue of sand-bitumen used for road building. It is understood that the Marland Oil Co. in one of its United States refineries has perfected a process for extracting oil from the tar sands on a commercial scale. Details of the plan were worked out at a conference between Hon. Charles Stewart, federal minister of the interior; Hon J. E. Brownlee, premier of Alberta; a representative of the Saskatchewan provincial government; and Glen M. Ruby, managing director of the Hudson's Bay-Marland Oil Co. The arrangement provides for the extensive use by the two provinces of the residual bituminous sand in highway improvement along the main lines of tourist traffic while a favorable freight rate over the Canadian National Railways is also an item. The enterprise will involve the erection of a large plant at McMurray.

Representatives of Alberta tar sand interests have been negotiating with the Manitoba provincial government with regard to utilization of Atahabaska tar sands for road building in Manitoba; and it is probable that with a favorable freight rate, an additional market will be opened in Manitoba.

It is currently reported that the newly organized Canadian Eagle Oil Co. will handle the refining of the oil from the tar sands, and will also undertake some development work on Hudson's Bay-Marland leases in the Canadian West.

In British Columbia, British Columbia Oil & Coal Development Co. No. 2 in the Sage Creek district, in the southeastern part of the province, is reported drilling at 550 feet.

In Saskatchewan, the Simpson Oil Co.'s No. 1, Section 9-29-25w2, in Simpson district is resuming drilling at 1,400 feet. A Regina syndicate has leased territory west of Simpson and if favorable geological reports are received will drill a test this season.

Ontario Fields

In the Ontario fields, the Ajax Oil & Gas Co. is preparing to drill its No. 2 deep test in Dover Township, Kent County, about 600 feet east of No. 1 producer. No. 1 some weeks ago got a fair production, estimated around 265,000 feet a day, in the Trenton limestone.

In Romney Township, Kent County, the Southern Ontario Gas Co. has finished a test located on the Coatsworth road, west of Port Alma, with a good gas production in the Tilbury sand. The well is reported to have come in at 2,000,000 to 3,000,000 feet a day flush production. This is one of the biggest wells finished in the Tilbury Field for some years, and is something of a freak, as it is pretty well ringed about with small gassers. The tools are reported to have dropped suddenly just before the well started to flow, and it may be that the drill tapped a pocket of gas.

In the same field, Union Natural Gas Co. has finished No. 282, Talbot Road, Romney Township, as a small gasser. Union's No. 281, Seth Barr farm, Lot 169, Talbot Road, Romney Township, will finish next week in the Tilbury sand.

In Camden Township, Kent County, the Ajax Oil & Gas Co. is continuing its drilling in the new shallow oil area recently developed near Croton. The company has five or six wells on production and is doing additional drilling. The wells get their production between 300 and 400 feet, and are reported to start at between 5 and 10 bbls. a day. The field is west of the Thamesville shallow pool first developed some years ago.

In Middlesex County, a Detroit syndicate, drilling south of Strathroy, has finished a deep test at around 3,700 feet with a small show of gas in the Trenton limetsone. The rig is being moved to a new location in Sombra Township, Lambton County, a few miles from Brigden, where another deep test will be drilled.

SOUTHWEST TEXAS FIELDS

(Continued from Page 49)

Survey 412, Block 3, located 160 feet to north and east lines, has derrick up; location is being made for No. 57, northwest of No. 55.

Albercas Field

Newton Drilling Co.'s No. 1 Bruni, Survey 64, located 910 feet to south line and 365 feet to west line, is drilling at 2,184 feet with no sands thus far.

Charco Redondo—Zapata

W. R. Duke's No. 1 J. M. G. Rodriguez, Block 17, W. R. Duke Subdivision of the Charco Redondo grant, is drilling at 130 feet.

Dale Field—Caldwell

Sun Oil Co.'s No. 4 Talley, Swearingen Survey, is location 300 feet northeast of No. 2. The Texas Company's No. 4 Osteen, J. Gilbert Survey, 150 feet to northeast and southeast lines, at 2,186 feet, has set casing, no Serpentine yet.

Luling Field

M. K. Koenig's No. 6 Tiller has been spudded in. Pat M. Armstrong's No. 1 Hardeman, Miles G. Dykes Survey, 150 feet to northwest and southwest lines of farm, is completing at 2,192 feet taking in both Edwards and Eagleford. Magnolia Petroleum Co.'s No. 20 Rios, J. Henry Survey, 300 feet to northwest and southwest lines, is drilling at 2,025 feet; No. 8 Mercer is down 2,216 feet. North & South's No. 1 Kelly is drilling at 7,570 feet; No. 2 Tiller is drilling at 7,110 feet.

Kingsville Field—Kleberg

Humble Oil & Refining Co.'s No. 5 Kleberg, Section 40, Block 8, located 150 feet to south and west lines, is to test sand at 2,910 feet after plugging back from 2,940 feet where it tested little oil and sulphur water; No. 6 Kleberg, Section 40, Block 1, located 450 feet to north line and 150 feet to east line, is bailing at 2,240 feet.

Adams Gas Field—Medina

C. E. Lange and Jake Jarmon's No. 1 Adams, Survey 71, located 500 feet to north and west lines of Block 20, is shut down at 164 feet (corrected depth).

Saxet Field—Nueces

Alamo Drilling & Leasing Co.'s No. 1 Gallagher, Survey 158, located 1,215 feet to north line and 650 feet to east line, is ready to resume drilling at 150 feet. Saxet Oil Co.'s No. 3 Weil, is at 2,550 feet waiting on casing. The Texas Company's No. 1 State, Survey 689, 150 feet to west line and 425 feet to south line and 500 feet north of the shore line, has derrick up.

Refugio Field—Refugio

Houston Oil Co.'s No. 1 Lambert has set casing at 504 feet; No. 11 Heard has set casing at 3,290 feet. Houston Gulf Gas Co.'s No. 4 W. Heard is drilling at 2,890 feet; No. 5 W. Heard is drilling at 3,000 feet; No. 1 Virginia Hallman is setting casing at 414 feet; No. 1 Vance is in sand at 3,800 feet and will make test. Saxet Oil Co.'s No. 6-A Wilson Heard, Refugio Survey, 210 feet to north line and 540 feet to west line, is ready to spud in. George Williams, trustee's, No. 1 Terrell, Martin Powers Survey, is drilling at 3,200 feet with sand at 3,196-3,200 feet.

White Point Field—San Patricio

Alamo Drilling & Leasing Co.'s No. 1 Hunter, Seguin Survey, 150 feet to north line and 400 feet to east line, at 1,872-80 feet cored sand and is setting casing. Houston Oil Co.'s No. 5 Humble fee is location in Block 19, 167 feet to south and west lines; No. 3 Ragsdale, J. N. Seguin Survey, is location 1,200 feet north of No. 1. Houston Gulf Gas Co.'s No. 1 J. M. Bennett, Roos Subdivision, is moving in machinery. Saxet Oil Co.'s No. 14 Rachal, Rachal Survey, 155 feet to south and west lines, is drilling at 268 feet; No. 1 Bennett, Roos Survey, Block 9, located 813 feet to south line and 658 feet to west line, is standing; No. 1 Hunter is erecting derrick.

West Gas Field—Zavala

Tritex Oil Co.'s No. 2 West, Survey 43, located 366 feet to north line and 266 feet east of Uvalde-Batesville Highway, is down 200 feet.

CALIFORNIA FIELDS

(Continued from Page 55)

above the pay. Practically all of the major companies operating in this section have reduced the scope of drilling operations during the past few weeks and a further reduction may be anticipated from now on as there will be no special hurry to drill up this acreage in as much as the crude oil curtailment is expected to continue in effect for several months. The Associated finished No. 6 in Section 23-28-27 several days ago and this new well was brought in pumping 185 bbls. of 15.2 gravity oil daily from the 2,360-foot level. The completion of this well just about

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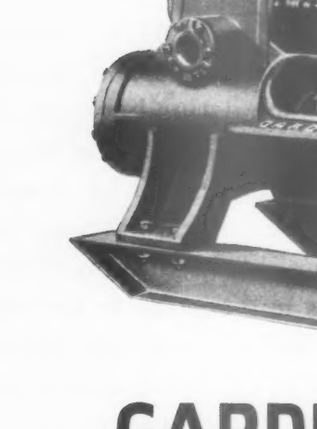

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concludes the Associated's present drilling program and although No. 44 is rigged up actual spud will probably be suspended indefinitely.

The California Petroleum spudded in two new wells during the past week and finished No. 13 in Section 14-28-27, this new well starting off pumping 175 bbls. of 15.4 gravity oil daily from 2,040 feet. The Chanslor-Canfield Midway Oil Co. also chalked up a new producer during the week, No. 19 in Section 23-28-27, showing an initial pumping of 140 bbls. daily from 2,144 feet. This company has two other immediate potential producers, Nos. 20 and 21, both of which are standing cemented at the present time. It is doubtful if they will be completed at the present time, however, in view of the production curtailment. The St. Helens Petroleum put No. 5 in Section 26-28-27 on a production test a few days ago and it was brought in pumping 194 bbls. of 15.5 gravity oil daily from the 2,286-foot level. The Petroleum Securities will probably finished No. 13-A in Section 22-28-27 some time within the next week as the cement had been drilled out of this well previous to the first of the month and it could not be suspended with any definite certainty that no damage would ensue by stopping work in the oil sand instead of finishing it in the usual manner. This is of secondary importance, however, as any wells finished in the future will be shut in immediately upon completion.

Round Mountain

Drilling operations in the Round Mountain Field of Kern County have not reflected the curtailment in heavy oil production as there has not been any reduction in the number of strings of tools in operation and drilling operations will probably continue in spite of the curtailment movement as this development work will not have any effect on state production in as much as new wells in this area are shut in immediately upon completion due to the absence of pipe line facilities. The Honolulu's No. 79 in Section 18-28-29, which was finished during the latter part of March, was shut in upon conclusion of a three-day production test, during which period it pumped a total of 1,750 bbls. of 16.4-gravity oil. No. 47 in Section 18-28-29 will probably be the Honolulu's next completion in this field, although No. 94 in Section 20-28-29 is also being prepared for early production. Both, however, will be shut in soon after completion of the initial production test. Drilling operations in the Mount Poso Field, located approximately 15 miles west of the Round Mountain Field, are practically negligible and it is safe to assume there will be no change in the present scope of work, although one or two new holes may be started in order to conform with lease requirements. The California Petroleum has material on the ground for its first test in Section 15-27-28 and an early spud is anticipated unless permission can be secured to hold off. The Coalinga Field of Fresno County will reflect the crude oil curtailment to a very substantial degree as the reduction in production amounts to a total suspension of activities in several instances, although the total projected curtailment has not yet been effected.

Midway-Sunset

The Standard Oil Co. chalked up two new producers in the Midway-Sunset Field during the past week, both of them being relatively small pumpers. No. 85 in Section 19-31-24 showed an initial of 122 bbls. daily when put on the beam at 4,339 feet, while No. 92 in Section 33-31-24 was brought in pumping 115 bbls. of 23.1-gravity oil daily from 4,279 feet. The Republic's No. 25 in Section 8-32-23, which came in flowing 1,061 bbls. per day from the 2,704-foot level a few weeks ago, is still making approximately 1,000 bbls. per day under a natural flow and the successful performance of this well, a former shallow zone pumper, has stimulated work on the several holes being put down in search of this heretofore unknown sand. The Republic is making good progress on No. 31 in Section 7-32-23 and this project, spudded in upon completion of No. 25, should intercept the Republic sand some time within the nert 30 days as it recently passed the 700-foot level. The Chanslor-Canfield Midway Oil Co.'s No. 29 in Section 8-32-23, a former shallow zone producer, should also be in a position to make a bid for production in the Republic sand about the end of April, as this project was reported down 1,506 feet a few days ago. No. 4 in Section 7-32-24 will probably follow this well into completion shortly after, as it, too, is making good footage. The Richfield Oil Co. will test out the Republic sand in Section 6-32-23 within the next few weeks as its No. 7, a new well, is drilling ahead at 1,210 feet.

Northern California Wildcats

The Pacific Eastern Production Co. failed to secure a satisfactory water shut off in its No. 2 Union Avenue, a wildcat south of the city of Bakersfield in Kern County, and this well, which was carried down to 4,500 feet and subsequently plugged back to 4,308 feet, will require some additional work before a conclusive test can be made of the sand found at this point. No. 1 Union Avenue, a few hundred feet south of No. 2, will remain suspended pending the outcome of the work under way on No. 2. The Milham Exploration Co., which has successfully pioneered a gas field in the vicinity of Buttonwillow, is putting the finishing touches on its No. 4 in Section 5-28-23 and if successful production is secured the company will have added to its potential holdings in this area, as three dry gas wells have previously been completed. The Southern California Gas Co. has not experienced the same degree of success which has attended the efforts of the Milham, however, and this company is making preparations to redrill and deepen its wildcat in Section 4-28-23 which was given a preliminary production test a week or two ago from the 2,782-foot level.

Development work in the Kettleman Hills area has slowed up a little during the past few months, although the General Petroleum, Milham Exploration and Bolsa Chica Oil Co. are still actively at work in this section. The General Petroleum is being temporarily delayed because of mechanical trouble in its second test in this area and the outlook for a speedy recovery is not any too promising. The Milham Exploration Co., on the other hand, is still making hole and should conclude a deep test of its holdings in the very near future as this wildcat was down 7,070 feet during the early part of the week. The Marland Oil Co., discoverer of the Seal Beach Field in the Los Angeles Basin, is stepping right along with its Monterey wildcat, located in the Salinas Valley between San Miguel and Bradley, and this structure, which is theoretically favorable for the accumulation of oil, should be given a definite test within the next 60 or 90 days unless some unforeseen difficulty arises in the meantime. The Marland's wildcat in this district, No. 1 Naciemento, was reported down 2,780 feet a few days ago but nothing is anticipated above the 4,000-foot level. The Union is substituting rotary equipment for cable tools in No. 1 Huasna, a wildcat in San Luis Obispo County, and footage from now on should naturally be more rapid.

Southern California Wildcats

Wildcatters in southern California are watching the Associated's No. 2 Cypress in the Potrero area very closely as this test is expected to result in commercial production within the next few weeks. The outcome of this project is not of any particular importance from a development standpoint as the Associated appears to have practically the entire structure tied up, although of course subsequent developments may change the present outlook. No. 1 Cypress focussed the attention of operators on this district over a year ago when it blew in only to develop water trouble subsequent to completion. The failure to develop commercial production in the first sand resulted in its being carried down and this exploratory work has definitely proven up the existence of two horizons. No. 1 Cypress, the discovery well, however, has never been commercially productive due possibly to its unfavorable location structurally, but No. 2, on the other hand, has all the earmarks of a good well, as it is correlating about 100 feet higher on the structure.

The Shell contemplates an early spud in No. 2 Mission, its second wildcat in the San Fernando Valley, and this project will undoubtedly be watched very closely during the course of work. The San Fernando Valley has been wildcatted spasmodically, but not systematically, for several years, but this area will receive considerable attention if some wildcatter should secure production. The San Fernando Valley shows a very marked lithologic difference from the Los Angeles Basin down to around the 3,900-foot level, but below this point formations are somewhat similar and if the Miocene is definitely proven to be productive in the Los Angeles Basin there is ample justification to believe a similarly favorable condition exists at some points in the San Fernando Valley. The Olympic Refining Co. will probably abandon its Sunset Beach wildcat in the very near future, due to the present rather unfavorable outlook and the lack of adequate finances to justify further work.

NORTH LA.-ARK.

(Continued from Page 46)

with this week "Cotton Valley light" and "Cotton Valley heavy" the new classifications starting off with a daily average run of 1,800 bbls. and 4,440 bbls., respectively.

Daily average shipments from the various pools follows:

Louisiana	
Caddo light	10,500
Caddo heavy	3,936
Homer	4,385
Haynesville	6,225
DeSoto-Red River	4,125
Elm Grove	555
Bellevue	1,120
Cotton Valley light	1,800
Cotton Valley heavy	4,440
Urania	7,400
Pleasant Hill	580
Total	45,065
Arkansas	
El Dorado	5,400
Smackover light	8,265
Smackover heavy	64,600
Stephens	1,100
Nevada County	1,515
Lisbon	2,340
Champagnolle	1,350
Bradley	125
Total	84,695
Both states	129,760
Last week	127,885
Increase	1,875

NORTH LOUISIANA

Bossier Parish

Cartersville—Arkansas Natural Gas Co.'s semiwildcat in Section 6-22-11, No. 1 Crawford, is drilling at 2,584 feet. J. R. Bahan is drilling No. 1 Kilgore, Section 31-23-11, at 850 feet. Delaware-Louisiana Development Co. cemented 4¾-inch casing at 3,058 feet on No. 2 Bollinger, Section 38-23-11. Louisiana Petroleum Co. cemented 6-inch casing at 3,072 feet on No. 1 Peyton, Section 25-23-12, total depth 3,079 feet. Magnolia Petroleum Co. tested 1,000,000 feet of gas in No. 1 Cason, Section 1-22-12, at 3,091 feet and will go a few feet deeper; No. 1 Matlock, Section 25-23-12, is drilling at 2,500 feet. Northwest Louisiana Gas Co.'s No. 1 Barnett, Section 25-23-12, is drilling at 1,200 feet. The Texas Company cemented 8¼-inch casing at 796 feet on No. 1 Henry Rose, Section 31-23-11, total depth 1,065 feet.

Elm Grove—Arkansas Natural Gas Co. cemented 6⅝-inch casing at 1,895 feet on No. 1 Van Hoose, Section 36-16-12. Ellis & Markley are on a rock at 1,805 feet in No. 5 Hunter, Section 14-16-12. H. S. Goodwin's No. 1 Mercer, Section 21-16-12, is temporarily abandoned at 1,970 feet. Palmer Corp. made location 1,320 feet north and 500 feet east SW cor., Section 25-16-12, for No. 10-B Caplis and has 10-inch surface string cemented at 201 feet. R. O. Roy's No. 7 Caplis in the same section is waiting on standard rig, total depth 1,538 feet.

Bellevue—G. W. Wetherbee set 10-inch surface string at 40 feet in No. 2 Smith, Section 23-19-11, and is drilling at 320 feet.

Caddo Parish

Greenwood—Belchic & Laskey's No. 4 Sharp, Section 10-18-16, was dry at 1,897 feet and is drilling deeper. Greenwood Production Co. began drilling No. 1 Cushman & Bridges, Section 15-18-16, Monday and are down around 200 feet. William Gross and others have begun drilling No. 1 Baker, Section 35-17-16. Magnolia Petroleum Co.'s No. 2, Section 4-17-16, cored lime at 2,740 feet; No. 2 J. W. Furrh, Section 28-18-16, tested 175,000 feet of gas at 884 feet and is going deeper.

Mooringsport—Bee Oil Co.'s No. 1 Muslow, Section 29-20-15, shut down at 1,129 feet since January 18, cemented 6-inch casing at 2,280 feet and is arranging to test, total depth 2,292 feet.

Oil City—Dobson and others made location 1,220 feet west and 380 feet south NE cor., Section 5-20-16, for No. 1 Rives, set 10-inch at 90 feet and are drilling at 350 feet.

Pine Island—Dixie Oil Co.'s No. 81 Dillon, Section 13-21-15, is shut down in red shale at 4,148 feet; No. 91 Dillon, Section 14-21-15, is shut down awaiting orders at 2,702 feet; No. 92 Dillon, Section 13-21-15, is fishing for drill stem, total depth 4,339 feet. Magnolia Petroleum Co.'s No. 8-A Hampton, Section 15-21-15, is drilling limy shale at 4,039 feet; No. 22 Robertshaw, Section 23-21-15, cored hard sand at 3,942 feet. Simms Oil Co.'s No. 1 Glassell, Section 23-20-15, cemented 10-inch at 100 feet. Simplex Oil Co.'s No. 3 Baird, Section 22-20-15, cemented 10-inch casing at 105 feet.

Monroe District

Morehouse Parish—United Carbon Co. is drilling No. 1 Davis, Section 21-20-4, at 1,620 feet.

Ouachita Parish—Hatcher & Evans cemented 6-inch casing at 2,160 feet on No. 7 fee, Section 21-19-4. Imperial Oil & Gas Products Co.'s No. 5 Stubbs, Section 13-19-3, is arranging to retest at 2,193 feet; No. 6 Stubbs is a derrick, 1,650 feet west and 650 feet north SE cor., Section 14-19-3. Jordan Drilling Co.'s No. 1 Pereboom, Section 32-19-4, cemented 6-inch at 2,156 feet. Montgomery and others made location 548 feet west and 614 feet north SE cor., Section 30-19-4, began March 28, set 12-inch surface string at 180 feet and are drilling at 675 feet. Pioneer Oil & Gas Co.'s No. 1 Filhoil, Section 11-18-4, is drilling at 450 feet. Southern Carbon Co.'s No. 50 fee, Section 18-19-4, has 12-inch surface string cemented at 186 feet.

Union Parish—Industrial Gas Co. is drilling No. 1 Lewis, Section 14-20-3e, at 1,760 feet.

Richland Parish

Dixie Oil Co.'s No. 1 McCoy, Section 29-16-6, cemented 6-inch casing at 2,300 feet. W. C. Feazel has drill stem stuck at 2,402 feet in No. 1 Duff, Section 21-16-6, and No. 1 Noble, Section 36-16-5, is drilling at 2,100 feet. Feazel & Hemler made location 410 feet south and 30 feet west of the C Section 21-16-6. Gulf Refining Co.'s No. 3 Rhymes, Section 28-17-6, is in hard lime at 3,031 feet. Moody & Seagraves' No. 1-B Sartor, Section 9-16-6, is fishing for one joint of 10-inch casing lost while setting, total depth 910 feet. Natural Gas & Fuel Corp.'s No. 3-C Thomason, Section 21-16-16, drilled into the pay at 2,465 feet and is pumping in mud to kill No. 1 Thompson, crater offsetting it and No. 4-C Thompson, in the same section, a south offset to the crater, cemented 6⅝-inch casing at 2,272 feet to do likewise. Ruston Drillling Co.'s No. 1 Mulhern, Section 19-16-6, is drilling at 1,500 feet; No. 1-B Sartor, Section 9-16-6, cemented 8-inch at 817 feet. Southern Carbon Co.'s No. 1 D. R. Sartor, Jr., Section 9-16-6, cemented 8-inch at 878 feet and is drilling at 1,450 feet.

Sabine Parish

Magnolia Petroleum Co.'s No. 1-B Hall, Section 33-10-12, is in chalk at 1,775 feet.

Webster Parish

Cotton Valley—Humble Oil & Refining Co. began drilling No. 6 Davis, Section 14-21-10, a Trinity test, after the Ohio Oil Co. found oil in No. 38 Bodcaw, March 29, and has 15½-inch surface string cemented at 472 feet; No. 2 Webb, Section 14-21-10, another test to the 4,600-foot stuff, set 11¾-inch second string at 2,824 feet. Magnolia Petroleum Co.'s No. 1 G. W. Cole, Section 27-21-10, is drilling shale at 4,556 feet; No. 2 Coyle is a location in the S W half NE SE,

Section 21-21-10, for a 4,600-foot test; No. 3 Aarnes-Cox, a location 660 feet south and west NE cor. NW, Section 22-21-10, since November, 1927, has derrick up for a deep Trinity test; No. 1 D. G. Cox, Section 22-21-10, is in shale at 4,404 feet; No. 1 J. M. Mixon, Section 22-21-10, is in lime at 4,210 feet. Palmer Corp.'s No. 1 Mixon, Section 22-21-10, has begun drilling.

Sarepta and Shongaloo—Arkansas Natural Gas Co.'s No. 1 Mitchell, Section 30-23-9, is drilling at 1,200 feet with 10-inch surface string set at 395 feet. C. H. Lyons and others cemented 6-inch casing at 2,696 feet on No. 2 Porter-Wadley, Section 29-23-9. Magnolia Petroleum Co.'s No. 1 Bailey, Section 29-23-9, cemented 8⅛-inch casing at 2,708 feet; No. 1 Camp, Section 36-23-10, is drilling at 2,492 feet; No. 1 Viola Mitchell, Section 31-23-9, is drilling at 1,831 feet. Harry Morris' No. 1 Lewis, Section 15-23-9, is drilling at 500 feet. Sun Oil Co. tested 100,000 feet of gas at 2,705 feet in No. 1 Haines, Section 30-23-9, and has shut down waiting orders.

ARKANSAS

Nevada County

Autrey Oil Co. made location in the NW cor. NW SE, Section 6-14-20, for No. 1-C Haynie and is down 1,188 feet with surface casing set at 100 feet and 6-inch at 1,178 feet.

Ouachita County

Smackover—Little Fay Oil Co. has cemented 6⅝-inch casing at 2,030 feet on No. 6 Robertson, Section 25-15-16. Ohio Oil Co.'s No. 7 Cramer, Section 22-15-16, is drilling at 2,828 feet. Phillips Petroleum Co. cemented 4½-inch casing at 1,965 feet on No. 1 Johnson, Section 34-15-15.

Union County

Champagnolle—Magna Production Co. is drilling at 2,104 feet on No. 2 Rowland, Section 14-17-14. Oilwell Corp. cored red shale at 3,163 feet on No. 1 J. Dumas, Section 11-17-14, after being shut down waiting orders at 3,097 feet since March 1.

El Dorado—Mellor, trustee, cemented 6-inch casing at 2,157 feet on No. 1 Bullock, Section 7-18-14. Mountz and others' No. 1 Pratt, Section 8-18-15, is waiting on standard rig to pump, total depth 2,200 feet.

Smackover—Lion Oil Refining Co.'s No. 7-C Murphy, Section 8-16-15, set 144 feet of 10-inch surface casing and is drilling at 300 feet.

EAST TEXAS

Harrison County

Clark and others have 6-inch casing cemented at 987 feet on No. 4 Furrh, in the James Short Survey. Magnolia Petroleum Co.'s No. 1 A. G. Vincent, R. W. Bedford Survey, is reaming to test 20 feet of sand, total depth 1,974 feet. Waterman Brick & Tile Co. tested 250,000 feet of gas at 2,316 feet in No. 6 Hickman and will go deeper.

Panola County

R. E. Davidson and others are rigging up to drill No. 1 Johns in the W. H. Woodley Survey. Magnolia Petroleum Co. tested salt water at 1,932 feet in No. 1 T. C. Adams, J. M. Birdsong Survey, and is arranging to deepen; No. 1 Martha Richardson in the Benson Lovell Survey, is drilling hard sand at 1,162 feet; No. 1 Leigh Trosper, B. Stevenson Survey, cored shale and lime at 2,362 feet; No. 1 S. R. Vance, John Womack Survey, set 152 feet of 13½-inch surface casing and is drilling at 280 feet. Natural Gas Products Co. is drilling 6-inch plug at 2,276 feet on No. 4 T. C. Adams in the Evans Brackins Survey. The Texas Company's No. 4-A T. C. Adams in the John Womack Survey, set 40 feet of 10-inch surface casing and is drilling the shallow gas rock at 975 feet.

GULF COAST FIELDS

(Continued from Page 56)

was claimed, but Pure Oil Co. officials have confidence that oil in greater quantity will be found a little deeper.

Pure Oil Co. now is laying plans to drill Lost Lake on a bigger scope and is building a camp from which the operations will be carried on. Derricks have been up for five other tests there since January and one or more of these will be rigged up as soon as possible. These have been standing pending developments in No. 1 Lost River.

At Hockley, Harris County, Humble Oil & Refining Co. has a location for another test, No. 3 Warren, which is 900 feet west and 3,008 feet north from No. 2, which was abandoned in heaving shale at 4,664-66 feet March 26. No. 2 Texas-Warren is drilling rock at 389 feet.

Humble's No. 1 Wilson at Raccoon Bend, Austin County, is drilling shale at 3,706 feet, and No. 1-A Grawunder is in hard shale and lime at 2,109 feet.

East Hackberry Operations

At East Hackberry, Cameron Parish, Louisiana, Calcasieu Oil Co. is nearing the pay sand in its No. 3 Caldwell, the latter drilling at 3,780 feet. No. 2 Caldwell, the discovery well last November, which found the pay in sand at 3,971-93 feet, is being rigged up to deepen. No. 1 Dorion is drilling at 4,777 feet for a deep test of the district. Louisiana Land & Exploration Co.'s No. 1-B Calcasieu Lake is drilling the plug of its 18-inch surface casing cemented at 500 feet. Yount Lee Oil Co. has started drilling in its No. 8 State which is down below 1,425 feet. The latter company also is starting two new tests at East Hackberry, Nos. 9 and 10 State land, the former being 35 feet west and 229 feet north of the southwest corner of Section 36, in Section 24-12s-10w, and the latter 560 feet north and 750 feet east of the southwest corner of Section 36.

In the Old Hackberry district, Yount Lee Oil Co.'s No. 7 School land is flowing 120 bbls. of fluid of which 90 per cent is salt water. This test was drilled to a total depth of 5,765 feet but after entering heaving shale was plugged back to 5,661 feet where three joints of 5-inch screen were set with blank pipe sealed to the 7-inch casing cemented at 5,140 feet. Here the test made two small heads of 36.2 gravity oil. The 2½-inch tubing then was run and the well made to flow. C. O. Noble and associates' No. 1 Ellender on the southeast side has been drilled to a total depth of 4,489 feet where efforts are being made to test.

At Sweet Lake, Cameron Parish, Pure Oil Co. still is working on its Nos. 3, 4 and 5 to restbre production. None of these wells has been producing for the past month.

Miscellaneous Texas Wildcats

Alexander & Lyles' No. 2 Gobel, Cummings Hacienda Survey, Austin County, is drilling below 2,600 feet. Weadock and associates have been changing rigs at No. 1 Ward, H.&T.C.R.R. Survey, Austin County, to deepen. The hole is below 1,505 feet.

In Colorado County, B. A. Johnson's No. 1 Breeding is drilling below 3,200 feet. E. M. Masterson's No. 1 Auerback is drilling around 1,000 feet and Waldvogel and associates' No. 2 Tanner at 450 feet. Rich Oil Corp. also has resumed drilling in No. 1 Von Rosenburg fee.

At Long Point, Fort Bend County, Gulf Production Co. has abandoned its No. 8 Wolf after drilling to 944 feet. Wright & Douglas' No. 1 Lawrence, Jackson County, has been spudded in as has A. M. Dean and associates' No. 1 Mashan, 11 miles northwest of Spindletop, Jefferson County. In the latter county, Beaumont Oil Co. is starting a new test, No. 1 Tyrell. Gulf Production Co. also is rigging up for No. 5 Bordages at Fannette following the recent abandonent of No. 4, which was drilled to 5,134 feet. Port Arthur Oil & Gas Co's No. 4 West at Westbury, another Jefferson County wildcat, has been shut down temporarily for changing boilers.

In Liberty County, 3 miles northwest of Hardin, Big Dome interests are spudding in on No. 1 Finley. At Hawkinsville, Matagorda County, Gulf Production Co.'s No. 6 Sanborn drilled into gyp at 108-49 feet and the company now is going to drill No. 1 Vinyard.

Miscellaneous Louisiana Wildcats

Acme Production Co. is drilling below 1,250 feet in its No. 1 Horest Pertuis, near the town of Sorrento, Ascension Parish. The 12½-inch surface casing was set at 108 feet. This company's No. 1 Dehass Eby is being rigged up. Gulf Refining Co.'s No. 6 United Land Co. on the Sorrento Dome, 6 miles southeast of the town of Sorrento, is drilling below 1,000 feet.

Rex Petroleum Co. has started drilling in its wildcat, No. 1 Sallier, Section 18-10s-10w, Calcasieu Parish. Another wildcat, Choupique (Lacola) Oil Co.'s No. 1 Benkenstein also is drilling in Calcasieu Parish, the latter being around 4,500 feet.

In Cameron Parish, Roxana Petroleum Corp.'s No. 1 Watkins, Section 8-12s-12w, west of the Hackberry district, is drilling hard sand and rock below 880 feet.

At Pine Prairie, Evangeline Parish, Evangeline Oil Co.'s No. 1 Ducide Guillery, which was reported abandoned in rock at 2,736 feet a week ago, has resumed drilling and is below 2,800 feet.

At Loreauville (Feussa Point), Iberia Parish, Louisiana, Gulf Refining Co. is rigging up for No. 2 Broussard, 100 feet north and 100 feet west of the southeast corner of Block 5, Section 26-11s-8e. Its No. 4-Z State, also at Feussa Point, is in an oil sand at 968-86 feet.

Louisiana Land & Exploration Co. has abandoned its No. 1 Averys Island, Iberia Parish, in a water sand at 5,505 feet and is making another location. At New Iberia, White and associates have pulled screen and liner to deepen No. 1 Bernard after testing salt water at 2,792 feet.

Roxana Petroleum Corp.'s No. 1 Wilbert at White Castle, Iberville Parish, is waiting for cement to set at 1,750 feet. This test drilled into salt at 2,320 feet and is going back to make another test below 1,750 feet. On the Bayou Des Glaise Dome, Iberville Parish, Union Sulphur Co. has started drilling in No. 2 Schwing.

At Bayou Bullion, St. Martin Parish, Rycade Oil Corp.'s new field, No. 3 Atchafalaya fee has surface casing cemented at 1,095 feet and is drilling plug.

Blue Ridge—Fort Bend County

H. G. Nelm's No. 1 Overly has been completed making an initial flow of 200 bbls. daily from sand at a total depth of 2,254 feet. H. R. Cullen has set strainer in No. 1 Luscher for a test of sand at 4,917 feet. Blakely & Mean's No. 1 Blakely, which was completed several weeks ago flowing 200 bbls. daily from sand at 3,374 feet, has stopped flowing and is to be deepened. Fort Bend Oil Co. also is to deepen its No. 2-C Blakely and is drilling deeper in its No. 3-C Blakely. H. R. Cullen's No. 2 Lafferty is drilling around 3,457 feet and his No. 2 Davidson at 2,438 feet. Gulf Production Co.'s No. 11 Blakely is down 2,830 feet and its No. 12 Luscher 3,350 feet. Navarro Oil Co.'s No. 4-B Robinson is drilling at 2,648 feet. Sinclair Oil & Gas Co.'s No. 1 Davidson is down 1,840 feet. Sam Watts and associates' No. 3 Blakely is drilling at 3,075 feet, while Watts Brothers Oil Co.'s No. 1 Scott is at 3,097 feet.

Big Creek—Fort Bend County

Gulf Production Co. has set strainer at 3,960 feet in its No. 39 Davis and is swabbing. Its No. 45 Davis is drilling at 3,589 feet. The Texas Company's No. 3 Wheat is drilling below 4,344 feet.

Hardin County Domes

At Batson, J. R. Everett's No. 3 King is pumping 175 bbls. of fluid daily, of which about 5 bbls. is oil. This is from sand around 1,300 feet. Paraffine Oil Co. is drilling in a new test, its No. 72 Paraffine. Capitol Oil Co.'s No. 10 Hodges is drilling below 3,805 feet. East Batson Oil Co.'s No. 5 Conzelman-Crary is drilling below 1,200 feet.

At Saratoga, Gulf Production Co. tested salt water in its No. 26 N.B.B.&C. in a sand at 1,075 feet and is drilling deeper at 1,090 feet. Paggi Brothers have a location for No. 45 Queen City and Rio Bravo Oil Co. has started drilling in its No. 83 Jordit, which now is down around 1,000 feet.

Gulf Production Co. got a well at Sour Lake pumping 150 bbls., 6 per cent water and sediment, in its No. 3 Thomson from sand at 4,075 feet. Minor Oil Co. also has set strainer in its No. 83 fee for a test at 1,094 feet. Theis Oil Co. set strainer in its No. 3 Merchant at 2,495 feet, but it sanded up. Gulf's No. 1 Hamman is drilling at 3,950 feet.

Pierce Junction—Harris County

Completed early in the week, Anderson & Plummer's No. 2 Whitehead made one of the best wells at Pierce Junction in several months. It came in flowing initially 2,500 bbls. of 27.5 gravity oil daily from sand at 4,881 feet. Rio Bravo Oil No. 1 Settegast also was brought in during the week flowing 950 bbls. daily from sand at 4,456 feet. This company's No. 101 G.H.&S.A. on the north has been abandoned after drilling to below 6,170 feet. This company's No. 3-B is flowing 300 bbls. from sand at 3,540 feet.

Five new tests have been started at Pierce Junction, these being Abercrombie & Harrison's No. 1 Ritter, Moody Corp.'s No. 1 Mary Alston and No. 1 Settegast, Woodward & Lee's No. 1 Settegast and H. R. Cullen's No. 1 Brock. Community Salt Corp. has another location for a test, but this is being drilled primarily for salt and will be of interest to oil operators only from a geological standpoint.

Gulf Production Co.'s No. 19 Taylor on the east flank is drilling at 4,475 feet. No. 25 Taylor is down 3,530 feet, and No. 1 Saunders has casing cemented at 4,090 feet. Rio Bravo Oil Co.'s No. 8-B Settegast is drilling below 2,669 feet; T. G. Shaw's No. 2 Fitzsimmons below 3,200 feet, and Union Oil Co. is getting ready to start drilling No. 1 Settegast.

Goose Creek—Harris County

Humble Oil & Refining Co.'s No. 73 Simms Smith is drilling in sticky shale at 5,717 feet. Humble's No. 51 Gaillard (25 acres) was bailed dry in a sand at 3,468 feet during the week and then sanded up. Casing has been perforated for a test of a sand at 2,800 feet, and as the week closed was being bailed again. Gulf Production Co.'s No. 16-A Tabb is swabbing at 3,500 feet. Its No. 19 Hoffman-Gaillard is at 4,240 feet. Lube Well Oil Co.'s No. 1 Dannenbaun has been shut down after testing salt water around 1,600 feet.

Spindletop—Jefferson County

Battleship Oil Co. has abandoned its No. 3 Parker on the northeast flank of the dome. This was drilled to slightly below 3,900 feet. Gulf Production Co.'s No. 8 Jack & Duff in the main field has been completed in a sand at 5,125 feet pumping 150 bbls. This is a well which was deepened from 4,957 feet, where it was pumping 160 bbls. net of oil. Gulf also got a small pumper in its No. 13-A Weed, which is making 150 bbls., 3 per cent water, sand 5,070 feet. This company's No. 13 Oakwood was being bailed for a test at 5,245-50 feet as the week closed. No. 19 McLean is drilling at 5,145 feet, and No. 1 Jeanette Hann at 3,700 feet. Rio Bravo Oil Co.'s No. 54 T.&N.O. is drilling below 3,882 feet. Sun Oil Co.'s No. 1 Prather is drilling around 3,900 feet. The Texas Company's No. 1 Gladys City on the west side is down 3,640 feet. Traders Oil Corp.'s No. 1 Cissell, north of Spindletop, is down 4,236 feet. Yount Lee Oil Co. has worked over its No. 24 Gladys City and put it on the pump for 60 bbls. daily of 27 gravity oil. This company also has started two new tests, No. 56 on its Gladys City and No. 64 McFadden.

Hull—Liberty County

Mecom Oil Co.'s No. 4 Taylor has been completed pumping 100 bbls. of fluid of which 10 bbls. is oil from sand at 3,934 feet. This test formerly was abandoned the latter part of February as a salt water pumper in sand at a total depth of 4,025 feet. It then was sidetracked and drilled to its present depth. Republic Production Co.'s No. 73 Dolbear tested salt water at 3,055 feet, but is to be deepened. This company's No. 77 Dolbear is drilling at 2,045 feet. The Texas Company and Vacuum Oil Co. are preparing to deepen their joint No. 6 Hannah. Those operators' No. 7 Hannah still is making only gas from sand at 4,842 feet.

Orange—Orange County

Gulf Production Co.'s No. 6 Chessom has been completed flowing 950 bbls. daily from sand at 3,860 feet. This company's No. 12 Pevoto is drilling at 1,800

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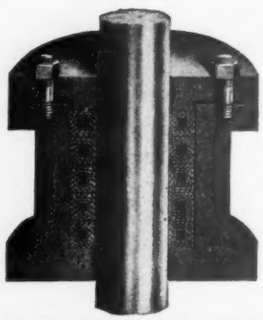

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feet. No. 8 Chessom is to be deepened. Rex Petroleum Co. is bailing No. 6 Carbello for a test at 3,160 feet. Sun Oil Co.'s No. 2 Brown is flowing 90 bbls., 4 per cent sediment and water from sand at 5,316 feet. Supreme Oil Co.'s No. 2 Jackson tested salt water at 3,694 feet and has been shut down.

High Island—Galveston County

Gulf Production Co.'s No. 2-A Smith is drilling at 3,010 feet. Its No. 1 League is down 1,750 feet. McLean Oil Co.'s No. 6 Cade is to be put on the pump from sand at 3,356 feet. No. 13 Cade is drilling at 1,964 feet.

Damon Mound—Brazoria County

Sinclair Oil & Gas Co. has completed its No. 22 Masterson flowing 45 bbls. of pipe-line oil from sand at a total depth of 1,585 feet.

Barbers Hill—Chambers County

R. L. Bartlett is making a pumper out of his No. 1 Fisher in sand at 2,154-64 feet. The 4½-inch casing is cemented at 2,140 feet. Mt. Belleview Oil Co.'s No. 1 Williams is drilling between 2,950 and 3,000 feet.

Markham—Matagorda County

Rycade Oil Corp. and Humble Oil & Refining Co.'s No. 1 Hudson has a sand at 4,536 feet and arrangements are being made for a drill stem test.

Nash Dome—Fort Bend County

Two Nash Dome tests are in oil sand, Rycade Oil Corp.'s No. 16 Wisdom below 4,244 feet and No. 23 Wisdom at 4,135 feet. The former, an old well deepened less than 50 feet, has drilled plug at 4,244 feet and is coring the oil sand. In No. 23, drill stem has twisted off and a fishing job is under way. No. 24 Wisdom is drilling shale at 3,618 feet and No. 25 Wisdom is in gumbo at 3,902 feet. No. 13 Nash is drilling shale at 4,750 feet.

Moores Field—Fort Bend County

Gulf Production Co.'s No. 15 Moore is drilling at 3,795 feet. No. 14, which has been flowing for several months, has stopped producing.

West Columbia—Brazoria County

Gulf Production Co.'s No. 1 Hogg is drilling at 2,210 feet. The Texas Company's No. 52 Hogg is down 3,765 feet.

SOUTH LOUISIANA FIELD

Jennings-Acadia Parish

E. L. Meyers has completed his No. 2 Arnandet pumping 10 bbls. daily from sand at 1,508 feet. Port City Oil Co.'s No. 8 Jennings-Heywood has been put on the pump at 1,798 feet, making 700 bbls. of fluid, of which 85 per cent is salt water. Abshier & Bolyard's No. 1 fee is to be put on the pump at 1,795 feet. Port City Oil Co.'s is deepening its No. 5 Jennings-Heywood. E. L. Simms is drilling a water well preparatory to starting drilling No. 1 Cockrell. Yount Lee Oil Co.'s two tests, No. 1 Crowley and No. 3 Housierre-Latrielle, are drilling ahead, the former below 2,000 feet and the latter around 2,500 feet.

Edgerly—Calcasieu Parish

C. M. Crotty has started deepening his No. 13 Lillard, which now is drilling below 1,900 feet. Gilmer Oil Co. has a fishing job in its No. 1 Fairchilds. Green Oil Co. is drilling around 2,100 feet in No. 1 Reed. Hercules Oil Co. is rigging up for No. 4 Paraffine, while Rex Petroleum Co. is rigging up to deepen No. 4 Hunter. Wilson-Broach's No. 2 Wilson is drilling below 3,600 feet.

Lockport-Calcasieu Parish

Vacuum Oil Co. and Gulf Refining Co. have rigged up to deepen No. 3 Miller, formerly completed in sand at 4,402 feet. No. 3 Farquahar also is to be deepened. This well was brought in early in March making a small amount of dry gas at 3,747 feet. No. 4-A is being rigged up. Screen is being set in No. 6 Bordages, the hole being in an oil sand at a total depth of 3,645 feet. Screen and liner also are being set in No. 1 Calcasieu River, the latter being at a total depth of 3,241 feet. No. 5 Lock-Moore is drilling at 3,283 feet. No. 1 State is cleaning hole at 3,764 feet preparatory to deepening. No. 8 Frieber & Wolf is being rigged up to deepen.

Sulphur-Calcasieu Parish

Union Sulphur Co.'s No. 724 fee made a drill stem test the past week showing salt water at 3,480 feet, and is being deepened. It is drilling around 3,950 feet. No. 723 fee is drilling below 2,400 feet.

Starks—Calcasieu Parish

Gulf Refining Co.'s No. 10 Industrial is drilling at 4,440 feet.

Vinton—Calcasieu Parish

Gulf Refining Co.'s No. 45 Star-Vincent is drilling at 1,904 feet.

LA.-ARK. WILDCATS

(Continued from Page 46)

Southern Lumber Co.'s land in Section 26-15-12, about 30 miles north of Johnson & Adams' test on the same company's holdings in Section 12-12-12. The latter test has reached contract depth and is shut down waiting orders at 3,015 feet. One of the major companies is surveying the Hurley blocks. The other wildcat getting under way is Timberlake and others' No. 1 Cravens in Section 27-13-17, Ouachita County, between Camden City limits and the site of the Houston Oil Co. and Southern International Pulp & Paper Co.'s plants at Cullendale, 3 miles south of town. Timberlake and others have 1,300 acres surrounding the location, and have moved rig from their No. 1 Dumas in Section 11-17-14, Champagnolle district of Union County, to drill it.

The Texas Company started work on No. 1 Boone Live Oak Planting Co. No. 1 in Section 11-20-12, East Carroll Parish in the center of the large block recently acquired which joins Palmer Corp.'s block to the northeast. Palmer Corp. is drilling its well on the O'Brien land in Section 7-19-11, 12 to 15 miles northeast of The Texas Company well. Mississippi interests have a block in Township 11, Range 12, Tensas Parish, on which they are obliged to drill before May 1, probably in Section 39.

Four wildcat completions during the week netted 20 bbls. of oil and three dry holes. W. R. Keever put No. 2-B Kavanaugh, Section 12-17-15, Union County, Arkansas, on the pump making 400 bbls. of fluid, 95 per cent water from 2,137 feet. Baca Drilling Co. abandoned No. 1 Stephens, Section 12-11-16, DeSoto Parish, as a dry hole at 1,950 feet and will skid derrick to start No. 2. Wingfield and others' No. 1 Haywood, Section 18-10-12, DeSoto Parish, temporarily abandoned at 2,400 feet since last November, is dropped from the report as a dry hole. Louisiana Petroleum Co. abandoned No. 1 Tensas, Section 11-11-6, Franklin Parish, as a dry hole at 2,503 feet.

NORTH LOUISIANA

Bienville Parish

Borden and others' No. 2 L. & A., Section 1-15-8, is on a rock at 1,000 feet. Humble Oil & Refining Co. is drilling shale and chalk rock at 2,298 feet on No. 1 Anderson, Section 29-18-5, and in shale at 836 feet on No. 1 Calhoun, Section 16-18-7.

Bossier Parish

H. S. Goodwin has temporarily abandoned No. 2 Curtis, Section 36-17-13, at 3,257 feet and No. 1 Mercer, Section 21-16-12, at 1,970 feet. Drill stem test of the latter at 1,950 feet showed salt water. William Gross and ohters began drilling No. 1 Stewart, Section 15-18-12, April 2 and are down around 200 feet. D. P. Johnson's No. 1 Caddo, Section 13-17-13, has rig up. Triangle Drilling Co. and Empire Gas & Fuel Co.'s No. 1 Bulkley, Section 9-20-13, is drilling at 1,150 feet.

Caddo Parish

J. T. Cox has derrick pattern on location for No. 1 Hall, 415 feet south and 350 feet east NW cor. Section 7-15-16, 4 miles south of Bethany. Empire Gas & Fuel Co.'s No. 1 Nicholson, Section 33-17-14, is drilling at 1,550 feet after a puff of gas and a salt water show in the top of the Nacatoch sand at 1,048 feet.

Caldwell Parish

Greenwood Production Co. has begun drilling No. 1 Caldwell Lumber Co., Section 27-13-5.

Catahoula Parish

Leonard Petroleum Co.'s No. 1 Knott, Section 32-11-8, has cemented 6-inch casing at 3,750 feet, total depth 3,782 feet. Lochnager Oil & Gas Co.'s No. 3 Beasley, Section 26-9-6, filled up with salt water after drilling 6-inch plug at 3,070 feet and is shut down waiting orders.

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The Texas Company has begun drilling No. 1 Tensas Delta, Section 4-10-6.

Claiborne Parish

El Dorado Chief Oil Co's No. 1 Jones, Section 8-20-6, is reaming to bottom, total depth 1,800 feet.

DeSoto Parish

Gulf Refining Co. has rig up for No. 35-A Jenkins, Section 35-13-12. R. O. Roy's No. 1 Tracy, Section 3-13-13, is shut down waiting orders at 1,650 feet and No. 1 Whitaker, Section 5-13-13, is drilling at 1,800 feet.

East Carroll Parish

Palmer Corp.'s No. 1 O'Brien, Section 7-19-11, began drilling April 4 and is down around 200 feet. The Texas Company has made location 1,650 feet north and 330 feet east SW cor. Section 11-20-12.

Grant Parish

W. D. Ball and others have started a third test on the Calhoun land, No. 3 having begun drilling March 29 and set 10-inch casing at 40 feet, total depth 500 feet.

Lincoln Parish

H. M. Harrell's No. 1 Griffin, Section 17-19-1w, is coring at 2,206 feet.

Monroe District

Morehouse Parish—Elbert Petroleum Co.'s No. 1 Morehouse Planting Co., Section 40-19-7, is shut down waiting orders at 1,708 feet. Gulf Refining Co.'s No. 1 Higginbotham, Section 42-20-7, is changing rotary, total depth 1,910 feet. The Texas Company has cemented 6-inch casing at 2,475 feet on No. 1 Myers, Section 15-22-7, total depth 2,530 feet. United Carbon Co.'s No. 1 Bastrop Pulp & Paper Co., Section 18-21-6, is reaming at 2,290 feet.

Ouachita Parish—Phillips and others have cemented 8-inch casing at 820 feet on No. 1 School fee, Section 16-16-4. J. P. White's No. 1 Schmidt, Section 3-15-4, is shut down at 2,500 feet.

Union Parish—Barbour Oil Co. has temporarily abandoned No. 1 Tugwell, Section 21-22-1e, total depth 2,434 feet. Carter & Goodwin's No. 1 Hudson, Section 7-23-1e, is shut down for fuel at 700 feet. Ouachita Natural Gas Co.'s No. 1 Hamilton, Section 22-19-1e, bailed dry with no show at 2,263 feet.

Rapides Parish

Collins Brothers' No. 1 Allen, Section 25-5-1w, is drilling at 2,630 feet after being shut down at 2,200 feet since the middle of February. Glenmora Petroleum Co.'s No. 1 fee, Section 1-2s-2w, is in gumbo at 3,200 feet. Minnesota Oil Co's No. 2 Wettermark, Section 13-5-4, is shut down at 2,320 feet.

Richland Parish

Gulf Refining Co. is in hard shale at 3,334 feet with No. 1 Millsaps, Section 8-17-6, and No. 1 Ches Wymond, Section 20-18-6, cemented 4½-inch casing at 2,693 feet. Moody & Seagraves bailed dry at 2,553 feet and are drilling deeper on No. 1 McDonald, Section 9-15-5. Woodley Petroleum Co's No. 1 Osborn, Section 3-17-7, is drilling at 2,900 feet.

Sabine Parish

R. L. Gay's No. 1 Mansfield Hardwood Co., Section 15-7-14, is shut down at 2,350 feet. The Texas Company is in chalk at 1,555 feet with No. 1 Hamlin estate. Zolle Oil & Gas Co whipstocked casing at 3,700 feet on No. 7 Bowman-Hicks, Section 14-7-14, and is coring at 3,773 feet.

ARKANSAS

Bradley County

Hurley and others have rig up in the NW cor. SE SE, Section 26-15-10, for No. 1 Southern Lumber Co. Johnson & Adams' No. 1 Southern Lumber Co. in Section 12-12-12, is shut down waiting orders at 3,015 feet, contract depth.

Clark County

William Henry, trustee, is drilling No. 1 Clark, Section 34-9-21, at 1,056 feet. McKenzie Oil Co.'s No. 1 Eakin, Section 9-11-19, is drilling at 800 feet after cementing back from 650 to 633 feet to cut off a fresh water flow.

Columbia County

George Dawley's No. 1 Gantt, Section 12-17-22, is shut down at 1,985 feet.

Faulkner County

Gold Creek Oil & Gas Co's (Dr. D. L. Bower) No. 1 Stermer, Section 17-4n-13, last reported November 3, 1927, as arranging to set 8-inch to test a show claimed to have been found in top of a sand at 3,347 feet, did not set casing but is shut down at that depth while efforts to refinance the test are under way.

Franklin County

Ozark Natural Gas Co. has made location in the SE cor. NE Section 16-8-27-for No. 3 Early.

Dallas County

Decem and others are drilling No. 1 Hillman, Section 20-10-13, at 1,210 feet.

Jackson County

Full Moon Petroleum Co.'s No. 1 Hugue, Section 24-10-4, last reported October 5, 1927, as having lost the hole at 150 feet and moving over to start second hole, is shut down at 500 feet for refinancing.

Lincoln County

Pine Prairie Oil & Gas Co.'s No. 1 Carter, carried on the field report since last November as shut down waiting orders at 2,176 feet, is awaiting refinancing.

Miller County

Bruton and others' No. 1 Red River Farms, Section 2-17-26, is shut down in gumbo at 2,496 feet. Lenz and others' No. 3 Dale, Section 23-15-26, is coring at 3,000 feet.

Ouachita County

Timberlake and others have moved rig from No 1 Dumas, Section 11-17-14, Union County, and are setting it up on No. 1 Carnes, in the NW cor. SE SE, Section 27-13-17.

Poinsett County

Aarnes and others' No. 1 Aarnes, Section 23-10-6, has reached contract depth and is shut down waiting orders at 3,003 feet.

Pope County

Natural Gas & Fuel Corp's No. 1 Wharton, Section 7-8-21, is in hard sand at 3,780 feet after a small show of gas at 3,250 feet.

Union County

W. R. Keever cemented 6⅝-inch casing at 2,125 feet on No. 3-B Ezell, Section 12-17-15. Magnolia Petroleum Co.'s No. 4 Cranston, Section 19-17-14, cemented 8¼-inch casing at 2,159 feet. J. O. Moore is drilling No 1 Pagan, Section 18-18-11, at 1,959 feet. Rhodes and others' No. 1 Union Sawmill, Section 14-19-11, shut down last week at 1,995 feet, is drilling at 2,450 feet. Simon and others have rig up for No. 1 Jerry, Section 21-17-14, ready to drill.

EAST TEXAS

Cass County

Hickman and others' No. 1 Mott in the Ambrose Douthitt Survey is drilling at 2,070 feet.

Shelby County

Magnolia Petroleum Co. cored sandy shale at 1,400 feet on No. 2 Pickering in the W. J. Crane Survey.

KANSAS FIELDS

(Continued from Page 44)

Churchill Pool, giving the daily average for the week ending April 7, follows:

	Bbls.
Roxana Pet. Corp.	10,962
Derby Oil Co.	681
Vickers Pet. Co.	195
Wentz Oil Corp.	266
Selby Oil Co.	6
Washoma Oil Co.	65
Total	12,175

Oxford Townsite

The Oxford Townsite Pool's production by companies for a similar period follows:

	Bbls.
Roxana Pet. Corp.	3,652
La Robb and others	150
Ramsey Brothers	184
Sharp and others	10
Pickard and others	143
Stanley & Jarvis	164
Ramsey & Fine	6
E. B. Shawver	83
Wasson and others	4,626
Derby Oil Co.	797
Barnsdall & Palmer	3,373
Mead Brothers	120
Ramsey Brothers	307
Total (from 71 wells)	13,615

Butler County

Empire Oil & Refining Co is erecting the rig for No. 2 Cranston, NW cor. SE SE, Section 22-27-5. Blankenship Petroleum Co has the rig up for No. 1 McAffee, SE cor. SW NW, Section 4-27-6. Mohawk Oil Co. has the rig up for No. 1 Palmer, SW cor. SE NE, Section 6-27-6.

Clark County

Watchorn Oil & Gas Co. is building the rig for No. 3 Stephens, CEL W half NW NW, Section 21-32-21w.

Cowley County

Pyle & Sutter moved the rig out for No. 1 Carlson, SW cor. SE SW, Section 21-30-3. Barnsdall Oil Co. made location for No. 2 Thurlow, NW cor. SE NE, Section 7-33-3.

Trees Oil Co.'s No 1 King, SW cor. SE NE, Section 14-31-4, is dry and abandoned at 3,008 feet. The Texas Company's No. 3 Hittle, NE cor. NW SE, Section 21-31-4, made 135 bbls. after a shot in sand at 2,408-14 feet. McNabb and others' No. 2 Wallace, NW cor. SW NW, Section 22-32-4, has been shut in for 3,000,000 feet of gas in sand at 2,906-56 feet. Lewis Production Co.'s No. 1 Buck, SW cor. NW, Section 5-32-5, is dry and abandoned at 3,085 feet. Roth & Faurot's No. 1 Wagner, SW cor. Section 31-33-4, has been abandoned at 2,616 feet. Shawver and others' No. 1 Mullett, C NW SE, Section 31-34-3, is a dry hole at 1,541 feet.

Elk County

La Dow and others' No. 1 Miller, NE cor. SE SW, Section 21-29-12, is drilling at 900 feet. Landon and others' No. 1 Harkness, SW cor. Section 26-29-12, is drilling at 500 feet.

Ellis County

Tatlock and others' No. 1 Leiker, NW cor. NE NE, Section 26-13-16w, is dry and abandoned at 3,507 feet.

Greenwood County

Polhamus and others moved the rig out for No. 1 May, SW cor. SE, Section 36-25-10. Cross and Gilliland Oil Co.'s No. 2 Burton, C SE SE, Section 9-25-13, is rigging. Reed & Wilson made location for No. 2 Olson, C S half NW, Section 28-26-9.

Tidal Oil Co.'s No. 1 Schwab, SE cor. NW SE, Section 30-22-13, is dry and abandoned at 1,920 feet. No. 3 Schwab, NW cor. SE, Section 30-22-13, made 100 bbls. from sand at 1,697-1,742 feet. Transcontinental Oil Co.'s No. 1 Fankhouser, NE cor. NW, Section 2-23-12, is dry and abandoned at 1,745 feet. Cross and others' No. 3 Hoover, NW cor. NE SE, Section 36-24-12, has been abandoned at 1,727 feet. Mendenhall and others' No. 1 Hoggins, NE cor. SW SW NE, Section 5-25-13, made 1,000,000 feet of gas from sand at 1,463-90 feet. Valley Osage Oil Co.'s No. 3 Roglin, CSL SW SE, Section 10-25-13, has been abandoned at 1,564 feet.

Harvey County

Roxana Petroleum Corp. has the rig on the ground for No. 1 Houry, NE cor. SW SE, Section 11-23-2w.

Lyon County

Basom and others' No. 1 Elrode, NE cor. Section 36-21-11, is dry and abandoned at 1,933 feet.

McPherson County

Galt Brown and others made location for No. 1 Fross, C NE, Section 18-17-1w. Tatlock Oil Co. has the rig on the ground for No. 1 Clark, C NW SE, Section 31-18-2w.

Marion County

Lariaux and others' No. 1 Warden, SE cor. NW NW NW, Section 23-17-4, is rigging. Woodward and others built the rig for No. 1 Teal, NE cor. NW NW NW, Section 23-17-4. Gear and others' No. 1 Regies, NW cor. SW NW, Section 18-21-4, spudded and shut down.

Phillips Petroleum Co.'s No. 2 McCoy, SW cor. SE NE NE, Section 22-17-4, is dry and abandoned at 2,530 feet. No. 3 Reznicek, SE cor. NW SW SW, Section 22-17-4, has been abandoned at 2,412 feet. Anderson and others' No. 1 Benthe, SE cor. SW SW, Section 31-18-5, is dry and abandoned at 2,680 feet.

Morris County

Fisher & Luck's No. 1 Stuart, NW cor. SE, Section 6-16-5, is dry and abandoned at 2,659 feet.

Russell County

Douglas Oil Co. is erecting the rig for No 1 Stobbel, C E half Section 25-14-11w.

Sumner County

Ramsey and others' rig is up for No. 2 Caldwell, NE cor. Section 22-23-2. Washahoma Oil Co. is building the rig for No. 2 White, SW cor. SE SW, Section 16-35-2.

Vickers Petroleum Co.'s No. 4 Shore, NE cor. SE, Section 24-31-2, is dry and abandoned at 2,870 feet. Roxana Petroleum Corp.'s No. 4 Sleigh, SW cor. SE NW SW, Section 25-31-2, has been completed for 200 bbls. in sand at 1,847-94 feet. No 5 Riverbed, SW cor. NW SE NE, Section 25-31-2, Churchill Pool, made 10 bbls. from sand at 1,859-1,909 feet. No. 5 Taton, SW cor. NE NW, Section 36-31-2, is making 600 bbls. from sand at 1,871-1,931 feet. No. 1 Work, SW cor. SE, Section 11-32-2, Oxford Pool, was completed for 12 bbls. in sand at 2,096-2,103 feet. No. 10 Community, Lot 4, Block 84, Section 11-32-2, made 10 bbls. after a shot in sand at 2,099-2,126 feet.

Derby Oil Co.'s No. 3 Burkett, Block 83, Section 14-31-2, was shot with 180 quarts and made 130 bbls. from sand at 2,010-2,109 feet. Jarvis & Stanley's No. 2 Croggins, Out Lot 22, Section 14-31-2, flowed 120 bbls. after the shot in sand at 2,006-2,103 feet. Roxana Petroleum Corp.'s No. 3 Frittz, Out Lot 26, Section 14-32-2, made 50 bbls. from sand at 2,018-89 feet after a shot of 120 quarts. No. 2 Barnes, SE cor. SW SW, Section 14-32-2, has been completed for 2,950 bbls. in sand at 1,986-2,112. No. 11 Emerich, Midland Valley Right of Way, Section 14-32-2, made 66 bbls. from sand at 2,048-90 feet. Roxana Petroleum Corp.'s No. 12 Emerich, Tract 5, Section 14-32-2, was shot with 20 quarts in sand at 1,245-66 feet and made 220 bbls. Barnsdall Oil Co. and others' No. 3 Wenrich, NW cor. NE NW, Section 23-32-2, had sand at 2,074-2,105 feet and made 1,580 bbls. after a shot of 20 quarts. Merridian Gas Co.'s No. 1 Bowers, SW cor. Section 8-35-1, has been shut in for 1,250,000 feet of gas in sand at 2,148-50 feet.

MORE SALT DOMES IN SMITH COUNTY, TEX.

MEXIA, Tex., Apr. 7—Two tests in Smith County which drilled into salt have been abandoned. One is the Humble Oil & Refining Co.'s No. 1 Pruitt, Henderson Survey, which found salt at 2,009 feet and drilled into it 8 feet. The Gulf Production Co.'s No. 1 McCammond, Vincent Moore Survey, drilled through the Pecan Gap at 2,085-2,379 feet; got the top of the Austin Chalk at 2,625 feet and top of the salt at 2,943 feet. The hole was abandoned at a depth of 2,949 feet. The tests indicate the presence of salt domes.

In Anderson County the Humble Oil & Refining Co. has made a location for No. 1 Mandlestam, Roberts Survey.

In Limestone County the Pure Oil Co. has started drilling No. 1 Henry Unfried farm, Neil Survey.

Other tests in the area are all shut down.

TEXAS SCOUT CHANGES

SAN ANTONIO, Tex., Apr. 7.—John A. Nichols, one of the oldest oil scouts in West Texas in service, will return to San Angelo in charge of the land and scouting department of The Texas Company when that district office at Midland is closed April 15. R. E. Witty will be transferred to Abilene and C. P. Powers to Fort Worth. C. J. Bradley, scout at Colorado, may remain there. The Texas Company is distributing its scouting force over a wider area for utility and economy. The district geological office at Midland will remain in charge of H. E. Munson, who has one assistant, J. W. Smith.

KILLED BY TRAIN

FORT WORTH, Tex., Apr. 7.—Robert L. Wylie, 49, Fort Worth, an employe of the Transcontinental Oil Co., was fatally injured when he was run over by a train of oil cars on the Missouri-Kansas-Texas track at Hodge Station.

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Above trucks and trailers in A-1 condition and a real bargain if taken at once. Phone 159, Box 116, Mounds, Okla.

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ROTARY AND STANDARD deep drilling outfit wanted with crew; must bear investigation, to join good company, to operate in Texas and Oklahoma. Complete information first letter. Address C. L. Taylor, 112 South Poydras St., Dallas, Tex.

WANTED—One 6" Standard rig or 4½" Parkersburg rig, will buy or trade smaller rig for same. Wire or write Sewell Well Company, St. Louis, Mo.

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I have one of the best propositions in the East. E. D. Watkins, Irvine, Ky.

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Lands with good geology our specialty. Send us your blocks with full information, description, geological reports and your proposition.

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An ideal plant for barreling and exporting oil. Twenty-two acres located in Westwego (across the river from New Orleans) on the tracks of the T. P. and M. P. Terminal Company with a frontage of 715 feet on the river. Contains storage tanks with capacity of 1,000,000 gallons, also several buildings suitable for Office, Laboratory, Warehouse, Pump and Boiler House, and filling machinery. Reasonable price and terms. Apply Gillican-Chipley Company, New Orleans, La.

OPPORTUNITY to develop natural gas near unlimited market; pay better than oil; believe this will prove big gas dome; excellent geology; wonderful earmarks; have no leases to sell, but will block and will take financial interest with reliable parties. Box 285, Fayette, Mo.

WANTED — By two mining engineers familiar with Western United States an individual or group with means to finance examination of mining properties with view to acquiring one of merit. Address P. O. Box 516, Creede, Colo.

BUSINESS OPPORTUNITIES

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HERE IT IS!

A few weeks ago I offered interests in 80 acres and 2 wells in Shackelford County, in the heart of the best shallow production in Texas, with the heretofore unheard-of capitalization of $6,000. A number of people read my ads and sent me $100 and $250 each; a large number are now mourning because they did not. The first well came in with a flood of oil, equaling the best in the district; the second shot oil high over the top of the derrick more than 50 times before it was brought under control, breaking all records. How much my associates will make on their investments is problematical, maybe 50 for 1, possibly 1,000 for 1. Time will tell as the oil is developed and sold.

I have just secured an 80-acre lease one-quarter mile from this marvelous property. I believe it has equal possibilities and that I can have several wells on the pipe line within 60 days. I am putting in the 80 acres and agreeing to drill two wells, all for $6,000—60 interests of $100 each, cash or terms. Take as many as you want as long as they last; first come, first served. Better wire your order and be sure.

If I was a promoter I would capitalize this lease for $25,000 to $50,000, but I am an oil developer. There is no promotion, no stock for sale, no overhead, no rake-offs of any kind. Those who join with me are my associates and partners, partial owners of the property, which is as sure to develop oil as any undrilled tract can be. With production, BIG DIVIDENDS are certain every 60 days indefinitely. Incidentally, half of the wells I have drilled the last 16 months have been producers. I believe I can get oil every time I drill, but I guarantee nothing more than a "square deal."

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Fort Worth, Texas

CAPITAL — Inquiries solicited from corporations interested in raising capital through the sale of corporate securities. Address B. W., 810 Broad St., Newark, N. J.

WOULD YOU trade Arkansas or Oklahoma land or land, part cash and part time for interest in Oklahoma Daily, near Tulsa? Write Box C-332, The Oil and Gas Journal, Tulsa, Okla.

YOUR WELLS LOCATED by latest scientific method for small interest. C. L. Williams, 969B Union Trust Bldg., Pittsburgh, Penna.

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MAYBE YOUR worthless oil stocks and mining stocks are not worthless after all. How do you know? Write Box R, Sapulpa, Okla.

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FINANCE YOUR OWN project with shares bonded. Quickest, most satisfactory known method of raising capital. Information free. Bankers Interstate Security, Electric Bldg., Denver, Colo.

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AT EVERGREEN, Denver's most exclusive summer resort, 11 cabins and hotel site, overlooks new lake, $55,000—offered $15,000 for hotel site alone. H. M. Veenstra, 1706 So. Logan, Denver.

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UP-TO-DATE MAP showing all townships, counties, and Oil and Gas Pools in Oklahoma, Texas, Kansas, New Mexico & Colorado. Price $2, postpaid. Kelly Map Co., P. O. Box 1773, Tulsa, Okla.

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4 lines	1.40	2.40	3.40	4.40
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6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
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THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

PATENTS—Oil well cases a specialty. Reliable services by an experienced practitioner devoting personal attention to each case. References to oil well clients in Tulsa. B. P. Fishburne, Patent Lawyer, 550 McGill Bldg., Washington, D. C.

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WARN ABSTRACT AND TITLE CO.
Abstracts of titles to lands in Reeves, Loving and Ward Counties, Pecos, Texas.

CRANE AND ECTOR COUNTIES—
Complete abstracts to all lands therein. Write or Wire us. (12 hour service).
MATTHEWS-MOORE ABSTRACT CO.
Odessa, Texas and Crane, Texas.
"The Title Tells The Tale."

HELP WANTED

DRAFTSMAN — Capable of handling design as well as detail work. Should be familiar with refinery and general oil field layout and construction. Experience and sample of work to accompany application. Chief Engineer, Empire Companies, Bartlesville, Okla.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

POSITIONS WANTED

SALES ENGINEER, employed, with 4 years petroleum work and 5 years selling experience, desires position. Box C-334, The Oil and Gas Journal, Tulsa, Okla.

GRADUATE ENGINEER — Seven years' experience, design, production, pipe line, refinery, good draftsman. Box C-331, The Oil and Gas Journal, Tulsa, Okla.

EXPERIENCED refinery man wants position, anything considered; foreign service preferred. Box C-330, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST — Six years experience oil geology U. S., Mexico, and South America, speaks Spanish fluently, now teaching State mining college, wants summer work June first to September fifteenth or will accept permanent position if can make headquarters in U. S. city. Box C-333, The Oil and Gas Journal, Tulsa, Okla.

BOOKKEEPER-Accountant — Young man with liberal education, experience in auditing and tax work, seven years with producing companies in Mid-Continent Field, desires permanent connection with growing company or individual producer. Opportunity for advancement is first consideration, salary secondary. Box C-346, The Oil and Gas Journal, Tulsa, Okla.

NOTICE OIL OPERATORS. A man with 15 years of successful Rotary operations, through the Mid-Continent as driller, production and executive, desires connections with good firm where work, knowledge and successful operations are wanted. Address Box C-341, The Oil and Gas Journal, Tulsa, Okla.

ADVERTISING RATES

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3 lines	1.05	1.80	2.25	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

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Compute white space at the above rates.

Mail your advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

MECHANICAL Engineer-Draftsman—Stanford graduate 1916, single, age 35, ten years' experience in oil field and refinery design. No objection to leaving U.S.A.; army airplane pilot. P. O. Box 265, Cleburne, Tex.

EQUIPMENT MAN — Ten years' experience supply and production companies. Sales office and field, local and foreign. Can handle any equipment job. Now employed but open for new connection. Box C-340, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST—Five years' experience major company in South America, Texas, wants position with independent company in Texas. Can take charge of subsurface, geophysics, leasing, detail geology. Well acquainted in Texas and can give best references. Box C-344, The Oil and Gas Journal, Tulsa, Okla.

REFINERY SUP'T.—Ten years' experience, will be at liberty May 1. Know all kinds of equipment, including pipe stills, Coast, Cross, Jenkins and Holmes-Manley cracking processes. Domestic or foreign service. References. Box C-345, The Oil and Gas Journal, Tulsa, Okla.

RANCHES AND FARM LANDS

27,000 ACRE Ranch, well watered, favorably located; surface value alone worth the price asked. W. T. Bishop, Winona, Kans.

LEASES—PRODUCTION

SOUTHWEST TEXAS — WINKLER, Loving, Reeves, Ward, Pecos, Culbertson Counties.
Drilling blocks, Leases, Royalties.
Ranches in fee.
H. F. Anthony, Pecos, Tex.

NEW MEXICO—Leases in Lea and Roosevelt; cheap royalties in Roosevelt and Guadalupe; leases in any county; information regarding New Mexico developments. William U. Ttate, Franciscan Hotel, Albuquerque, N. Mex.

WINKLER—PECOS COUNTIES
Leases and Royalties
W. S. PATTERSON
Pecos, Texas.

FOR SALE close to drilling wells; Leases, Royalties and Drilling Blocks in Webster, Calhoun and Chickasaw Counties. Best of Geological reports on this acreage. Box 4, Woodland, Miss.

LIBERTY COUNTY, TEXAS — For lease—190 acres in the Jacob E. Self League, South of Liberty and two miles North of the Moss Bluff Salt Dome. Owner. Box 27, South Orange, N. J.

DAWSON COUNTY
Oil and Gas Leases
GOODLOE & JONES
Phone 360, Lamesa, Texas

HAVE QUARTER section to lease for oil. Southeast quarter section 29-9-8, Grady County, Okla. If interested communicate with H. C. Gatewood, Route 2, Pocasset, Okla.

WATCH DEVELOPMENT and higher prices working North along Eastern edge of New Mexico. Can sell leases large or small tracts in Roosevelt, Quay and Union Counties at $.50 per acre. This has a chance to increase several times within a year. Owner 635 First Nat. Bank Bldg., El Paso, Tex.

FOR LEASE — 320 acres in Pinal County. Located seven miles South of Casa Grande, Arizona; oil, gas indications; also geology very favorable on this area. J. B. Cline, owner, 828 West 100 St., Los Angeles, Calif.

HIGHEST BIDDER gets lease on 40 a. NW¼ Sec. 15 Musk. Twp. Mich. Part so. river high land. Wire proposition. Carpenter, 1008 Melrose, Glendale, Calif.

WATCH THE PAGE preceding the classified section for good drilling propositions.

BROWN COUNTY leases, royalties; active locality. Good geology. Frank Poorman, 316 Taylor St., Ft. Worth, Tex.

LEASES—PRODUCTION

MAKE MORE MONEY THIS YEAR
We have large natural gas production proven leases and royalties. We need cash for expansion. Will sell undivided interest in a combined property or will sell production, leases or royalties separate. This is high-class property offered at a very low price. Firm entirely reliable and the owner of the property. Reference: Any Bank or Chamber of Commerce this city. If you desire to buy or handle anything in the lease, royalty, production or blocks for development in the best fields —write us.
COMMERCE DEVELOPMENT CO.
First Nat'l Bank Bldg.,
Chickasha, Oklahoma

HAVE 4,000-acre lease, Haskell County. Set 2,500, 8¼ pipe. Will sell any part to complete to 3,600. Good looking block. Good tools and rig. Box 155, Haskell, Tex.

TEST WANTED on block of 4,000 acres almost solid, favorable geology. In Grady County. Write E. E. McDowell, Verden, Okla.

BROKERS AND DEALERS
I have for sale large or small amounts of States Leases in Chaves and Eddy Counties, New Mexico. Full co-operation on cash or installment sales. Beecher Rowan Artesia, New Mexico.

FOR SALE — All but the SE¼ of SW¼ of Section 5, Township 5 North, Range 21 East, Latimer County, Oklahoma, semiproven oil district. Nearest oil well about six miles northeast; nearest gas well about two and a half miles northeast. Diamond drill revealed oil on this land while Government were estimating depth of coal. Further information write I. Ditzel, care General Delivery, Chicago, Ill.

WANT PARTY TO DRILL for share. I have 1,100 acres leases and casing, in Kentucky oil field. Ed C. Bryant, Calhoun, Ky.

WILL SELL 14,000-acre lease, complete rig and drilling tools 6,200 feet casing for $14,000 cash to anyone contracting to finish a 3,500-foot test in hole now down 2,400 feet. Four excellent geological reports. E. S. Rudd, Hotel Angelus, El Paso, Tex.

FOR SALE by owner, 360 acre oil and gas lease in Neosho County, Kansas. Four producing wells on property, recently drilled, fully equipped. Will sell reasonable. W. H. Bird, Matthewson Hotel, Parsons, Kansas.

LEASES—PRODUCTION

FIFTEEN ACRES in active area, Winkler County, Section 6, Block 26. Will consider outright sale or part cash with interest in development. Reply fully, Box C-342, The Oil and Gas Journal, Tulsa, Okla.

HAVE CHEAP TEN YEAR leases for sale Washita-Custer Counties, some ⅛ royalties and some good blocks of leases. J. J. Sallaska, Corn, Okla.

CADDO COUNTY

Oil leases and royalties.
C. W. LUDWICK
Fort Cobb, Oklahoma.

DRILLING SITES containing 2½ acres, for $20, in territory recommended by geologists. Deed and title coerificate with each tract. P. T. Calahan, Idabel, Okla.

NEW MEXICO oil leases; Lea, Eddy, Chaves, Union, Quay and all other active counties; complete list and map on request. Orcutt-Harris & Co., Colcord Bldg., Oklahoma City, Okla.

FOR SALE — Leases, Oil Production, Asphalt, Limestone and Other Mineral Lands. W. P. Harley, Bowling Green, Ky.

OIL LEASES and royalties. Ector, Crane, Pecos, Reeves, Ward, Upton and Winkler Counties; buy or sell. C. H. C. Anderson, 712 Linz Bldg., Dallas, Tex.

ROYALTIES—PRODUCTION

BUYERS AND SELLERS of Mid-Continent oil Royalties. Inquiries invited. Joe P. Crawford & Co., Petroleum Bldg., Oklahoma City, Okla.

ROYALTY
Perpetual Royalty Deed 120 Acres, Beaver Co., Oklahoma. $1.00 per acre. Box 25, Wilkinsburg, Penna.

ROYALTY under well drilling on good geology, $10 per acre. L. B. Seidler, Wells-Roberts Hotel, Oklahoma City, Okla.

CLASSIFIED advertisements in this section do pay well in money and in extended business relations. This has been proven by the continual advertising that we receive from the men in the oil industry, everywhere.

ROYALTIES WANTED — Cash for producing royalties, any size, priced right. Write description, full details and price. P. O. Box 1359, Tulsa, Okla.

WANT TO get in touch with parties wishing to buy royalty on excellent structures in New Mexico and Colorado. Will get you lowest prices on the best. Wish to retain small interest in lieu of salary. Will take care of any special requests. Let me know, will not disappoint you. H. C Peston, Box 303, Brownfield, Tex.

ROYALTY ACREAGE Mid-Continent. Commission basis. Maps, full data. Suite 501-10 East 43rd St., New York City.

FOR SALE
81 shares Schimmel production. Paying regular dividens. Make me best cash offer. Par value $2. Address Box 813, Donna, Tex.

PRODUCTION for sale; shallow, 42 gravity sweet oil, Brown County, Texas. Price right. Address Cooper, 214 S. Akard St., Dallas, Tex.

WANTED — Large production or an amalgamation of producing properties which show good net profits above operating charges. Give full details in first letter. Write Box C-343, The Oil and Gas Journal, Tulsa, Okla.

80 ACRES ROYALTY $10, 40 acres protection in two locations. Resale service, drilling bulletins, location reports, field news. National Royalties, Box 1214-B, Wichita Falls, Tex.

PRODUCING and close-in royalties, Winkler County. Write for list 16. National P & R Company, Box 1214-B, Wichita Falls, Tex.

Tell the Complete Story

No. 1

FOR SALE — Three Diesel generator units. Good as new. Can be bought at bargain.

No. 2

FOR SALE—Three 625-kva. Allis-Chalmers Generators; 3 phase; 60 cycle; 2,300 volts; 180 r.p.m. Direct connected to 750 h.p. Busch-Sulzer Diesels; direct connected exciters. Units are modern and have seen only two months service. May be had at reasonable price.

If these two classified ads appeared one beneath the other, you would unquestionably answer No. 2. It is concise but gives an adequate description of the generator units for sale. Prospective buyers will not ordinarily write for complete details, but expect them to be given in the advertisement.

Ad No. 1 is too brief to command action. The reader is left in doubt as to the make of the generator, the number of revolutions, the voltage and other important details.
In writing your classified ads bear in mind that facts are essential. Tell the complete story.

Classified Wants Department

Chicago Spot Gasoline Market Firm

Good Demand Reported Despite Unfavorable Weather Conditions Over Week End. Kerosene Active. Fuel and Gas Oil Quiet

By J. B. Waldo

CHICAGO, Apr. 9.—The spot gasoline market opened very firm this morning with refiners in most cases reporting a good demand although the weather was very unfavorable to motoring during the week-end over much of the Middle West. The demand was most active for the U. S. Motor grade but the higher tests were also called for quite largely. Several refiners advanced their gasoline prices an eighth cent for all grades. The low price for Motor gasoline for prompt shipment was 6¾ cents which was the price at which the larger amount of business was placed but other sellers were asking and reported sales at 6⅞ cents, and 7 cents was the quotation of still others. The higher gravities were equally strong in price. Many believe that with a return of more seasonable weather the 7-cent price will prevail. Orders are being taken for prompt shipment or for very brief periods and some resellers who could sell at 7 cents over the remainder of the month state that they cannot cover these orders at a profit right now.

Kerosene is in active demand largely from refiners with their own distribution some of the largest in this territory being in the market. The actual dealers' demand is rather uneven some stating that the business with the country dealers is good and others that their trade seem supplied for the present. The market is very firm with the 41 gravity held at 5 cents by practically all sellers and some asking an eighth more. Some of the refiners are only taking orders for kerosene from their regular customers.

The colder weather has started a small demand for furnace oils but the business is scattering with immediate delivery asked.

There was little activity in fuel or industrial gas oil rather a routine market with no changes in prices which are firmly held.

Many of the road men of local refinery offices were in the city over Easter Sunday and they say that few dealers have increased their stocks of gasoline and that it is becoming hard to sell at the higher prices now asked. Road conditions are stated to be very bad again and farm work held back by the rains and snows of last week. Under such conditions with the dealers the strength of the gasoline market generally is the more impressive.

Firmer Last Week

The gasoline market grew steadily firmer all of last week. The first two days of the week showed the most active spot market that refiners and marketers have had for a long time. The sales were large as a whole although there was little evidence that any considerable number of dealers were buying in excess of their early wants. There were some of the dealers who when asked for orders replied that they had sufficient gasoline for a while and in fact could not take in any additional supplies no matter what the price or the prospect for further increases in the cost of their gasoline to them. The present strong position of the market is based primarily on the condition of stocks in the field and the fact that refiners are holding for better prices and until very lately have not increased their runs. Late reports showed there had been a substantial increase in crude runs at the Oklahoma plants.

The demand from dealers did not continue at the peak business of Monday and Tuesday over the remainder of the week but the average for the entire week was a very satisfactory total of gasoline sold. It is hardly to be expected that the demand right now would continue at the big point of the active business of the best days of last week. The uncertainty of the weather has to be considered. The week end preceding last week was ideal for motoring and the consumption was very heavy. At the middle of the week heavy rains set in which were quite general over a good part of the territory and this may account in part for the falling off in the immediate demand.

Price Optimism

There was a good deal of optimism in the market regarding the future of prices and while there were some who hesitated to advance prices as fast as others the majority of the refiners and wholesale distributors were much more easily influenced by reports of improved conditions and discredited suggestions that possibly the market was moving too fast and that when the real demand came a little later there would be such a large supply that the situation would be less satisfactory. As has been stated, there has been a substantial increase in the crude runs as shown by a comparison made on April 1 with the crude runs of March 1. So far this increase does not seem excessive or unwarranted but if it continues and with an even greater volume of increase a return of the condition is possible where the buyer rather than the seller has the most to say regarding the price. As the week closed all of the refiners with sales offices here who at the beginning of the week were quoting 6¼ cents for U. S. Motor gasoline had advanced their prices to 6⅝ cents and several to 6¾ cents. Other refiners were selling at 6⅞ cents and doing a fair amount of business. Still others asked higher prices but when the price was higher than 6¾ cents there was little business except to their regular customers with whom they had some special relation. The market closed the week as strong at 6¾ cents with a tendency towards higher prices. The higher gravities were equally as strong, if not stronger, than the U. S. Motor grade, owing to scant offerings and the difficulty experienced by some of the buyers in securing supplies for immediate or prompt shipment. The 60-62 400 endpoint was apparently scarce even more so than the 64-66 375 endpoint gravity. Natural gasoline has dragged along during the week, there was a little better inquiry but the amounts wanted were not large. Prices were little changed. The situation in the differential territories to the east and northeast was still unfavorable to the Group 3 refiner as the prices quoted were below the parity of the same grade of material from Group 3. Some sales made out of Pennsylvania for Cleveland delivery were on basis of approximately 5¾ cents Group 3 and competition for the business was very keen.

Some marketers have been busy trying to buy gasoline in this market and offers were made to buy the U. S. Motor grade at 6⅝ cents but no sales were reported and some refiners were rather skeptical of the verity of these offers as there were refiners who were selling at that price at the time here and several offers were made by Group 3 refiners and by brokers in the group of U. S. Motor gasoline at 6⅝ cents. In one case the offer was of 25 cars of U. S. Motor grade full specifications including doctor test at 6⅝ cents, delivery a car a day over April so that gasoline at that price was not wholly lacking to marketers who might not be able to buy from some refiners. It is not believed that any material quantity of gasoline of any gravity was bought in advance for April delivery. Some few were able to buy small quantities, others bought for brief periods and the lowest price at which any quantity of gasoline for delivery over any part of the month was sold at 6¾ cents. Some was bought at 6½ cents but to sell at a profit this gasoline must be sold at 6¾ cents and some believe that failing a rather unexpectedly active demand the price may stay at that price for some days or even a week or two, until the larger consumption causes more active buying by dealers in the country. Roads are still bad in many sections off the hard highways, the evenings are short and the weather is not yet at the point where it is more comfortable in the car than in the house or some place of amusement. The market is doing fine, according to one local authority, but if it is hurried too fast we are likely to have a bad market just when the big demand comes on.

Kerosene Demand Active

Kerosene was being bought freely all of last week not only by distributors but by refiners and marketers as well whose sales were in excess of their supply of this popular material. The large majority of the orders from dealers asked for immediate shipment which few were in position to give. The kerosene is wanted for tractor fuel and in some sections gasoline is preferred to kerosene. Probably most farmers prefer the gasoline to kerosene as it gives a quicker start on a cold morning and where there is a tax on gasoline which is rebated to the user of the gasoline for any other purpose than for the driving of vehicles on public roads the difference in expense between the use of kerosene and gasoline is not large. Some of the refiners here with a high grade distillate are selling this as a good tractor fuel. In the case of at least two of the local refiners their distillate has a flash of under 160 degrees and it is claimed for it that it makes a very satisfactory tractor fuel. If every tractor in use was obliged to depend on kerosene for its power there would be a much larger demand than is the case. The price of the 41-43 gravity advanced quite sharply last week and at the close very little was to be purchased at 4¾ cents with most sellers asking 4⅞ to 5 cents and an occasional quotation being made of 5⅛ cents. The general opinion seems to be that kerosene will be good until May but after the early part of next month there will be little demand and for the refiner a small stock at that time is desirable. There was only a moderate business on the 42-44 gravity coming for the most part from established distributors who had built up a good business on this material and did not like to change the specifications even while admitting that there was little difference in the real worth of the two grades of kerosene.

Furnace Oils Slow

Furnace oils of all kinds were in light demand just an occasional car of distillate selling as a sort of filling in for a temporary need. The price was unchanged. Zero gas oils were in a little better demand than distillate but the business was passing in these and the straightrun product is more wanted than the zero gas oil today.

Gas Oil

Gas oil continued in a strong position all of last week although the heavy buying by the larger user for various purposes was not noticeable as many of them had supplied their needs for the next 30 days. The straightrun product if not actually scarce in the field was offered sparingly and many refiners stated that they were sold up for the present or had none to offer. The refinery price for a good straightrun gas oil was 2½ cents and if any purchases were made for a less price the quantity was small or the quality not of the best. All of the local plants state that they have no gas oil to offer at the present time. One has a blended fuel oil of 32-36 gravity but it is very careful to state that it is a blended oil or a fuel and not a gas oil although its gravity makes it useful for a substitute for gas oil for some purposes but not for a gas company. No large business was reported here to gas companies or to refiners for cracking stock although it is understood that The Texas Company is in the market for additional quantities of straightrun gas oil. There was some buying by the less important gas companies and one large car lot marketer was inquiring for gas oil probably for some of its gas company contracts of which it has several very large ones. The industrial demand was steady but quite a number of brass companies and other users had supplied their needs for the current month so that there was less activity in the market here than during the preceding week. With the better prices obtainable for gasoline, the larger demand and small stocks in the Mid-Continent Field a larger demand for straightrun gas oil for cracking stock is expected and this thought has much to do with the strength of the straightrun gas oil market. More of the cracked gas oil will be run with the end of cold weather as there will be a smaller use of the zero gas oil which may result in a single quotation for either the cracked or straightrun gas oil. The demand for the zero gas oil from distributors is gradually slowing down to a few cars although there is a considerable inquiry for the heavier gravities such as the 28-30 grade which is largely used in the oil heaters in the larger type of buildings and in the smaller manufacturing plants. The market for this grade is holding at 2¾ to 3 cents, according to flash, color and good general qualities.

Fuel Oil

The fuel oil demand has been less active than during the preceding week as many of the concerns that cover their needs from month to month are supplied for April and are temporarily out of the market. The demand is steady, however, and a considerable amount of new business is being booked but for the most part the orders are not for quantities but for a few cars for immediate or early shipment. The regular refinery fuel oil is not being offered freely and the sources of supply are very firm in their prices as a rule. Occasionally a slight lower quotation is made but the market is steady in the field. Fuel oil and crude fuel from West Texas and the Panhandle are being offered freely and actively pressed for sale by a limited number of selling organizations and they claim that they are meeting with good results in the way of contracts. Some of the users are stated to have reported that they liked this fuel as well as the Smackover fuel which they had been using and which is now available in only small quantities here at present.

Apparently this West Texas fuel oil is likely to win a place in this market and be used extensively by industries who require a large amount of heat and are not so particular as to the quality of the fuel used. Some refinery fuel oil which comes from cracking the Winkler County crude is being sold rather freely by a refinery in this district and it reports finding a ready market for all that is run. The percentage of fuel oil from this crude is rather high owing to the small

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Higher Gasoline Prices in the East

Market Position Strong With Further Advances Expected Within a Few Weeks. Sentiment Reported Decidedly Bullish

By Special Correspondent

NEW YORK, Apr. 9.—Higher prices for gasoline, both at the refineries and at service stations developed this week, and the market position is still strong, with further advances within the next few weeks indicated. Export markets have been quiet, due primarily to lack of inquiry from England and the Continent, owing to the Holy Week holidays in Europe.

Increases in refinery gasoline quotations range from one-fourth to three-fourths cent a gallon. Principal refiners in the New York market raised bulk motor gasoline to 9¼ cents a gallon, an increase of one-fourth cent, on Thursday, after some of the smaller refiners had marked up their quotations on the previous day. Pan American was quoting 9¼ cents at Baltimore, Norfolk and Carteret, N. J. Other large refiners were quoting the same figure. Warner-Quinlan was one-half cent over this figure at 9¾ cents at its local station, with one other seller up to 10 cents at New York. Standard Oil of New Jersey is quoting 9¼ cents a gallon at Bayonne, Baltimore, Norfolk and Charleston.

While refiners were not disposed to force the situation, it appears evident that the market has not yet reached the peak for the current move. Sentiment is distinctly bullish, and it is freely predicted that the New York market will go to 10 cents or higher within the next few weeks.

Reduced Operations

East Coast refiners have been producing gasoline on a curtailed basis during recent months. Not only were refinery operations reduced in some cases, but the larger percentage of low gravity crude being run with its comparatively low gasoline content, has been a further factor in cutting down gasoline output, and making eastern refiners more dependent upon the Gulf and Mid-Continent for stocks. In addition, weather conditions over the past few weeks have been exceptionally favorable, and consumption of motor fuel has been running materially over the anticipated volume.

Jobbers who had filled their bulk storage for later requirements were compelled to dispose of their holdings to take care of prompt business, and have come into the market not only for additional storage stocks, but for supplies to take care of their current sales as well. The market at the Gulf Coast has strengthened during recent weeks, owing to the heavy volume of export buying, and shipments to the East Coast have been consequently reduced.

Refiners undoubtedly had planned to turn to California for gasoline stocks in the event of a contingency such as the present one, but here again calculations have miscarried. California no longer is in position where it finds it necessary to virtually "dump" excess gasoline stocks in the East, and eastern buyers forwarding low bids to Pacific Coast refiners have been having them rejected. The spot market at present has not yet reached the point where California gasoline can profitably be moved eastward, but East Coast distributors anticipate such a market during the summer months and are seeking California gasoline for later delivery.

With Group 3 quotations again higher, East Coast refiners can see nothing but further advances in store for their market, and operations are being speeded up to take care of the summer demand. Advances in tank wagon markets in several sections of the country this week indicate a general improvement in the gasoline market position, and jobbers in the territories affected by the advances can be counted upon as competitive buyers with the eastern trade in Gulf and Mid-Continent refinery markets during the next few weeks.

The metropolitan sales divisions of East Coast refiners have been unusually busy during the past week. Tank wagon dumps have been larger and distributors have been back in the market for replacement supplies with more frequency.

The improvement in the statistical position of the gasoline market since the first of the year has been considerable. Domestic gasoline consumption for February, amounting to 21,136,000 bbls. showed a gain of 8 per cent over the previous month and of 15.8 per cent over February, 1927. Domestic demand for the first two months of the year was 42,075,000 bbls., an increase of 5,947,000 bbls., or 16.4 per cent, over the first two months of 1927. Combined domestic consumption and exports of gasoline in the first two months of 1928 aggregated 49,129,000 bbls., an increase of 5,900,000 bbls., or 13.6 per cent over the corresponding period last year. March gasoline business was heavy and it is expected that figures for the first quarter of the year will show marked gains over those for the first three months of 1927.

According to a cable from London this week, large marketing companies have reduced the price of gasoline 2 cents a gallon at pumps in London and 3 cents in provincial areas. It was not stated whether this reduction was in line with the lower market in the United States or whether the British marketers were at the start of what has come to be regarded as the "annual price war."

Buy More Russian Oil

According to announcement by Saul G. Bron, chairman of the Amtorg Trading Corp., American agents for the Russian Soviet oil trust, several additional contracts have been concluded between Amtorg and the Vacuum Oil Co., whereby the latter will purchase additional Russian oil products from the Soviet trust for sale in new markets. The new contracts, according to the announcement, cover a period of six years. A. Kanin, vice president of the Soviet Oil Syndicate (Naphtha Syndicate), negotiated the contracts during a recent visit here.

Under all of the contracts now in operation between the Soviet and Vacuum Oil Co. and Standard Oil Co. of New York, petroleum products to the value of approximately $10,000,000 annually will be delivered from Russia to the two American companies. Standard Oil Co. of New York and Vacuum Oil Co. both placed contracts for the purchase of Russian petroleum last summer, the Standard purchase involving 3,500,000 bbls. of Russian fuel oil, with Vacuum taking mostly crude oil for its European refinery and refined oil for the Near East.

These transactions precipitated one of the bitterest controversies in the history of the oil business. Royal Dutch-Shell interests strenuously opposing the marketing of Soviet oil by the two American companies on the ground that the oil was from property seized by the Soviet without compensation to the original owners. Much of the oil sold by the American companies in the Far East in competition with Royal Dutch-Shell products actually came from producing properties formerly belonging to the latter and "nationalized" by the Soviet, according to the contention of the Dutch and British oil interests.

Tank Wagon Gasoline

With refinery quotations still on the increase, the tank wagon market has taken on an added firmness. Standard Oil Co. of New York this week advanced its price 1 cent a gallon at points which have been under the regular schedule during recent months, owing to local conditions. The Buffalo market was raised 1 cent, and a similar advance was made at other points. The Beacon Oil Co. advanced gasoline 1 cent to 19 cents at Boston.

This evening-up of the tank wagon schedule in an effort to restore uniformity in the territory is believed to be the forerunner of a general advance. The larger companies have already withdrawn some of the special terms which they had extended their filling station distributors and higher prices at the stations are being seen as the contracts run out and are not renewed.

Retail gasoline prices in New York City show a wide variation. The municipal stations and those of the Mileage company, a Warner-Quinlan subsidiary, are posting 15 cents. Other independents are quoting 15 and 16 cents. Stations selling the brands of the larger refiners are quoting from 18 to 20 cents, with 19 cents the average figure.

Filling stations in near-by suburbs, which have been sharing in the general gasoline price-cutting campaign for the past six months or more are advancing their prices to the posted scale as they find it impossible to get the concessions which they formerly obtained.

So-called "independent" gasoline jobbers have been extending their business to a considerable degree in New York territory during the past year, but the action of the larger companies in eliminating many of the concessions formerly given to customers indicates that the increase in consumption has been so great that the heavier sales of the independent jobbers have made no serious inroads into the aggregate business of the larger concerns.

Kerosene

Sales of kerosene are characterized as fair for this season of the year, with the current movement sufficient to maintain the present price level and little more. Strength in the export position, together with seasonable increases in sales in other market centers, have been stabilizing influences in the East Coast situation.

Tank wagon business in kerosene has continued moderate, with the market still quoted at 15 cents a gallon, the same price that has prevailed over the entire winter season.

Fuel Oil

While supplies are liberal, owing to the heavier receipts of Venezuelan and West Texas crudes, with their high fuel oil content, at North Atlantic refineries, the market seems to be thoroughly under control. The quotation of $1.35 per barrel at refineries, $1.41½ and alongside in the harbor, has been steady for a number of weeks past, and the market seems to be free of any weak holdings which might later disturb things as "distressed" holdings.

Consumption of bunker oil on contracts with the large steamship lines has been well up to expectations, and in addition there has been a good day-to-day amount of spot trading going on in the market. Refiners have been pushing fuel oil sales and while prices are lower than for some years past, so too are production costs. The present situation tends to keep California fuel oil off the eastern market.

Gas and Diesel Oils

Some slight curtailment of buying of gas oil has been reported in one or two instances, but this has not been sufficient to bring about any lowering of prices. The market is still held at 5¼ cents for oil of 28 degrees gravity or better at local refineries, although it is possible that this price could be shaded on a large business.

The Diesel oil situation has been without change this week. Inquiry has been but moderate, and refiners are still quoting $2 per barrel, in bulk, at New York refineries.

Lubricating Oil

Sales have fallen off and prices have weakened as a result. This week's market has been quite spotty and prices have shown an unsual degree of fluctuation.

Refiners were not pressing sales of paraffin oils and the market was quoted one-fourth cent higher on 28 pale. Stocks were reported to be of fairly heavy volume, but with buyers limiting purchases to their prompt requirements, there was comparatively little buying support being extended.

Cylinder stocks also declined during the week, the lower prices representing an adjustment of the market to the revisions which Pennsylvania refiners have recently made. There was a good inquiry during the latter part of the week for 600 E, with Warren oil quoted at 24 cents a gallon and Oil City 1 cent below this figure. Bright stocks also showed weakness.

Motor oil was beginning to move out in larger quantities, as weather conditions for automobiling become more favorable. Industrial lubs, however, were still spotty. Operations at New England cotton mills are showing little expansion, and takings from this quarter are consequently much below normal. Textile outlets in the New York territory are improving, however, notable expansion in the rayon knitting and weaving fields being seen in this district. Refiners are going in for the business on rayon processing oils quite extensively, but owing to the many peculiarities of the so-called "new silk" they are experimenting much difficulty with their blends.

Wax

With the exception of fully refined 135-137 a.m.p., which is still in limited supply and in good demand, the wax market has weakened. Sellers have cut 120-122 a.m.p. one-fourth to 3¾ cents a pound, with 125-127 off one-fourth cent at 4 cents and 130-132 a.m.p. down one-fourth cent at 4⅜ cents. Crude scale business has fallen off in export markets, although a little business for the account of domestic consumers went through this week.

Petrolatums

Better buying of the white grades has developed and prices are firmer. Lily white can still be worked at 8¼ cents and snow white at 9¼ cents a pound, but sellers are quoting one-eighth to one-fourth cent over these figures in some instances. Dark green is still holding at the 2-cent level, and there does not appear to be much around under this figure. Amber is steady at 3⅜ cents a pound, with sales fair.

Mineral Oils

Recent interruption in shipments of Russian medicinal oil into this country has created quite a shortage of the foreign mineral oil, and prices have been sharply advanced. Oil of 885-890 specific gravity, 325 330 viscosity, has been increased to 95 cents to $1 a gallon, 15 to 20 cents over recently prevailing prices, with other grades up in proportion. This situation is believed to be but temporary.

Export Markets Sluggish

Holy Week holidays in Europe have been accompanied by an appreciable letdown in business in export oil trade circles. Few inquiries were received by the trade during the week, and no cargo business was reported put through at North Atlantic ports.

Export Navy gas, in cases, remained steady at 24.90 cents a gallon at North

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Flash System Aids Cracking Operation

Rebuilt Battery at Derby Refinery Has Larger Gasoline Yields and Increased Capacity With Little Coke

By C. O. Willson

WICHITA, Kans., Apr. 7.—The Derby Oil Co. has completed changes in the operation of its battery of Dubbs cracking stills which have added materially to its attractiveness as a manufacturing unit. Greater throughput, increased yields of gasoline and a commercial grade of fuel oil as a residuum product with very little coke formation are the principal benefits derived from the new operation.

The present operation incorporates what is known as the flash system. This method of operation was recently made available to refiners by the Universal Oil Products Co., owners of the Dubbs process. The present Derby operations are not to be considered indicative of the results obtainable in a new installation, although the main operating principles are the same. The new installations are designed especially for the flash system and naturally include some perfections not obtainable where an old battery is rebuilt.

The problem of the Derby management was to modernize a battery of four Dubbs units which had been in operation for about five years. These units, which were among the first to be built in the Mid-Continent Field, had the small 10-foot by 10-foot reaction chambers without the hot oil pumps for recirculation. The results secured from the operation during the past year were not comparable to those obtainable in the newer installations and the management decided to shut down the units and make the changes which have been completed since the first of the year.

Since the company's plan of rebuilding was new it has necessitated considerable experimental work in design and operating methods. Although it is now giving very satisfactory results it is probable that some minor changes will be made later which will be reflected in the operating results.

Method of Operation

The accompanying flow chart shows the main features of the new cracking operation and also the operation in which one of the original cracking units is used as reducing still. Due to the increased capacity of the Dubbs stills in the new method of operation all four units were not needed to handle the charging stock available from the skimming operation of the Derby refinery. For that reason the management decided to use one of the units as a reducing still for the present. As now operated, the one reducing still furnished the gas oil charging stock for two cracking units. If deemed advisable this reducing operation can be eliminated and the topped crude oil charged direct to the cracking units. This in fact has been done with satisfactory results. This description, however, is based on the combined reducing and cracking operation.

Reducing Still

By following the course of the liquid and vapors in the flow chart the difference between the present Dubbs operation and the old method is readily apparent. In the reducing operation the topped crude oil, which is a fuel oil of 24-26 gravity, is charged direct to the tube still of one of the Dubbs units. In order to enlarge the capacity of the unit, 32 tubes were added, making a total of 82 tubes in the still.

The oil leaves the still at a temperature of about 860 degrees Fahrenheit, emptying into what was formerly a 10 by 10 reaction chamber. In this chamber about 90 per cent of the charge vaporizes passing to the dephlegmator. The residuum is taken off the bottom of the chamber and is recirculated as fuel, the supply being adequate for the requirements of the reducing still and the two cracking stills. This fuel recirculating system was perfected at the Derby plant about a year and a half ago and was described in The Oil and Gas Journal at that time. With the old method of operating the Dubbs units sufficient residuum was taken from the reaction chambers to furnish the fuel for the entire operation. The same procedure is now followed, except that all the fuel is taken from the flash drum (reaction chamber) of the reducing still.

In the dephlegmator all the vapors are condensed as gas oil with the exception of about 15 per cent, which are taken overhead and condensed. This overhead distillate on naphtha cut is rerun along with the pressure distillate from the cracking operations. Laboratory tests show that this overhead distillate of the reducing still contains about 50 per cent finished gasoline. The specifications of the overhead distillate are kept uniform through the knockout control in the top of the dephlegmator.

View of two cracking units with flashing system at Derby refinery.

Cracking Operation

The gas oil accumulates in a stock tank where it is picked up by the first pump of the cracking operation. The oil is first charged to a 3½-foot by 18-foot mixing tank, where it comes in contact with the hot oil recycle stock from the flash chamber of the cracking unit. As now operated one mixing tank takes care of both cracking units with only one charging pump.

The bulk of the fresh gas oil charge enters the bottom of the mixing tank with enough sprayed in the top to control the small naphtha stream which is taken overhead at that point. The gas oil charging stock from the bottom of the mixing chamber is picked up by a hot oil pump at a temperature of 500 degrees Fahrenheit and charged to the dephlegmator. At this point it comes in contact with the hot vapors from the reaction chamber where it is further preheated. It is then charged to the tube still, where it is brought to a temperature of 885 degrees Fahrenheit.

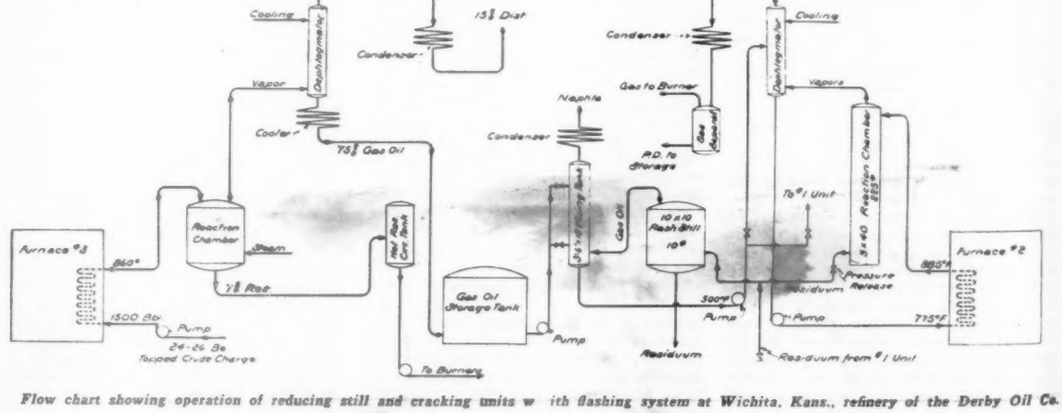
The liquid empties into a 5 by 40 reaction chamber. These chambers were not a part of the original Dubbs installations, but were purchased from a company whose refinery has been shut down for some time. The operating pressure at this point is 225 pounds. The liquid residuum in the reaction chamber which accumulates in the bottom is released to the flash still. A small percentage of fuel oil is taken off the bottom of the flash still. The remaining vapors, as previously explained, pass to the mixing drum, where they are mixed with the fresh charging stock.

The vapors from the reaction chamber pass to the dephlegmator. A knockout arrangement in the top of the dephlegmator controls the overhead stream, which constitutes the pressure distillate cut. This distillate is rerun in the usual manner to secure the finished gasoline.

Those familiar with the old type Dubbs units are aware that the operation does not include the flashing operation. The charging stock is simply charged to the dephlegmator, then to the tubes of the still and finally to the reaction chamber where the cycle of operation is completed.

Advantages of New Method

As previously explained, several advantages are claimed for the flash system of operation. These are readily apparent when the present operation is compared with the old method at the Derby plant.



Flow chart showing operation of reducing still and cracking units with flashing system at Wichita, Kans., refinery of the Derby Oil Co.

Up to the present time in the Derby operation, there is not any great difference in the gasoline yields between the old and new methods. The new method is averaging about 49 per cent of finished gasoline having an end point of 400. The average yield with the old method was 46 per cent.

The principal advantage lies in the greater capacity and the increased value of the residuum products. With the old methods the units were operated on a four-day cycle—three days on stream and one day for cleaning. One of the units has just finished a 30-day period on stream and this will probably be lengthened as the operation is perfected. Based on a monthly operation, this means that two units under the new method of operation will handle at least 35,000 bbls. of charging stock compared to 20,000 bbls. monthly with the old method.

The new method shows a distillate yield of 10 per cent, which compares with a former yield of 14 to 15 per cent. This product meets the ordinary stove distillate requirements. The fuel oil yield with the new operation is averaging about 32 per cent. This is an excellent grade of fuel oil with a low cold test and a gravity of 8 to 10 A.P.I. In the old operation, yields of 5 per cent gas oil and 13 per cent fuel oil were obtained. This fuel oil, however, could not be considered a commercial product due to the large quantity of free carbon. By using it when it was still at a high temperature it could be burned as plant fuel. It was practically valueless for marketing purposes.

Very Little Coke

With the old operation the coke yield averaged from 7 to 8 per cent. This product also has little value as a marketable product. As now operated, the cracking units produce less than 1 per cent coke. Losses in the old method averaged around 13 per cent and with the new method 8 or 9 per cent. Both loss figures include the non-condensible gases which are utilized as plant fuel.

The main difference in the two operations can be explained as being due to the flashing system. The old units operated at a pressure of 160 pounds and the present units at 225 pounds. There are also minor differences as to temperatures.

In the former method the time on stream was largely limited by the coke capacity of the 10 by 10 reaction chambers. By removing the heavy ends from the reaction chamber as they accumulate in the bottom, very little coke accumulates. Releasing the liquid residuum at a reduced pressure in the flash still enables the lighter ends to vaporize and separate from the heavy liquid ends. The latter has practically no free carbon, a fact which is explained as being due to its quick removal from the high pressures and temperatures of the reaction chamber. In effect, this means that what was formerly a coke or a poor grade of fuel under the new method of operation is split between recycle gas oil and a commercial grade of fuel oil.

Quality of Product

In concluding there is one other feature of the new operation which is worthy of mention. That applies to the relative antiknock values of the two gasolines. Dubbs cracked gasoline invariably rates high in antiknock properties. Tests made of the Derby gasoline, however, show that the gasoline obtained in the flashing operation has a higher benzol equivalent than formerly. Similar results have been obtained in other installations where the flashing system is used. Just what part of the manufacturing operation is responsible for this difference has not been definitely determined. The Derby sales department is obtaining premium prices for the gasoline secured in the refinery cracking operation.

GASOLINE MARKET FIRM IN CHICAGO

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quantities of kerosene and other products that are run readily from this material.

With so many small refineries building in West Texas which will run on the local crudes and the small quantity of kerosene and naphthas which can be cut it is expected that a large volume of fuel oil will be obtained. The present shortage of kerosene may result in part from the fact that quite a number of refineries are now using the West Texas crude for their material and cut very little if any kerosene. Some of the formerly most reliable and prolific sources of supply for kerosene now have none to offer which throws the demand back on a limited number of plants.

An analysis of the figures of the Bureau of Mines for February shows that certain sections of the country are running more crude and getting less light products particularly kerosene. Naturally they will have more of the heavy fuel oil.

The price situation was practically unchanged last week. The first of April witnessed the end of the temporary arrangement in the Illinois bituminous field but quite a number of the smaller operators signed a renewal of the scale and ample supplies of coal seem assured. Quite a number of mines were closed down but there were probably twice as many mines operating or in condition to be operated as the demand warranted so the coal situation is without any real influence on the oil market. Cheap fuel oil has undoubtedly increased the demand for fuel oil by inducing more plants to put in oil burning equipment so that a larger consumption is assured so long as the price is low enough for the oil to enable the users to compete with the coal-fired plants.

Lub Oils

Refiners of bright stocks and other lubricating stocks state their contracts are being taken out in a very satisfactory manner in fact more rapidly than a year ago or some say than in any other season. This movement on contracts constitutes the greatest activity at present. Compounders report a very good business in blended motor oils and specials for the industrial plants. There is a very good demand but when the question of price is raised there is a less satisfactory report made for competition between various sections and between refiners in the same section is very active and prices show little recovery from the recent low level. So many of the large buyers have contracted for their supplies for the season or the year that there is considerable resistance to any advance in prices. Some expect that the improved situation in the gasoline market will be reflected a little later in the price of lubricating oils. The present outlook is for a good gasoline demand and if the cars are used more freely than last year for example it must result in a larger consumption of lubricating oils and greases.

Tank Wagon Prices

There has been no general change in the tank wagon scale and there seems to be no real reason for expecting any at present. It is a rather contradictory situation when jobbers are welcoming higher prices at the refinery but just as soon as the price does advance they begin to think of a tank wagon raise. A tank wagon advance would be welcome to many concerns but at the same time cutting of prices is still quite active in many sections. The cuts may not be quite as openly made in some instances but prices are being cut. For example, in a nearby city of this State one of the leading dealers has distributed cards giving the holder a 2-cent reduction at any station of the company. These cards were handed to the employes of the larger manufacturing organizations. Another company not to be outdone distributed cards to the employes of the retail stores and it is a very unimportant resident in that thriving manufacturing city who does not have a card entitling him to a reduction of 2 cents a gallon in the price of gasoline bought. Salesmen who have been in the city from various parts of the territory state that there is still a good deal of secret as well a open cutting of prices.

Right here in Chicago the station price is 16 cents a gallon but there are many places where the motorist can have his tank filled for 14 cents. Many of these places are garages, supplied by tank wagon deliveries not in tank car lots. It would appear as inevitable that if the tank wagon scale were generally advanced there would be even more of the cutting of prices until the refinery market had advanced to cover the increase in the range between the tank wagon and the refinery costs.

There is a good deal of optimism and the belief seems rather well founded that the coming season will be a good gasoline season. But there is little good in more volume unless there is a better profit to the business and the trade as a whole do not want to have the season spoilt by indiscriminate and general price cutting or the intrusion of a large number of new dealers into the industry.

Strange as it may seem some of the major companies are still persisting in their plan of extensions of their gallonage even though a large number of their stations show no profit. There are still any number of people who believe that there is a great opportunity for them in the oil business. They come in and make inquiries regarding various phases of the industry and it is as hard to convince them that this is not a good time for the starting of new stations as it used to be to prevent some people from buying fake oil securities. There will always be some inequality of prices but these can be reduced to a minimum by not having too wide a spread between the established selling price and the cost of the material to be sold. Conditions point to a higher gasoline market and that established in due time higher prices at the stations will be justified.

HIGHER GASOLINE PRICES IN EAST

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Atlantic, with bulk Navy unchanged at 9¾ cents. Export naphtha, 61-63 degrees, was 10¼ cents, with 64-66 at 10¾ cents, and 66-68 degrees 13¾ cents. Reports in export circles indicated an advance of one-eighth cent a gallon at the Gulf, where Navy was held at 8¼ cents, 62-64 degrees at 9 cents, and 64-66 at 9¼ cents a gallon. Export sales thus far in the year are running ahead of those for the corresponding period in 1927, and operators expect that the continued favorable position of the American market with respect to gasoline prices will make for a heavy export movement over the balance of the year. France has been in the market in an unusually large way during recent months, while Spain has also been a heavy taker of American gasoline.

Lubricating oil sales for shipment abroad have fallen off, and the market position was spotty throughout the week. In consequence, prices were erratic, and subject to shading on some of the grades.

Kerosene export sales were light, but prices were strong, with Europe expected back into the market shortly. Export quotations in the New York market are 7 cents for standard white in bulk, 16.90 cents in cases; and 8 cents for water white in bulk, 17.90 cents in cases. Quotations at the Gulf are up one-fourth cent for the week, it is reported, at 6¼ cents for prime white, and 7¼ cents for water white.

Large quantities of paraffin wax are going out on sales previously made, but additional business this week has not been very heavy. The same holds good with regard to petrolatums, quotations on the latter being somewhat stronger, following the naming of higher prices by some of the leading refiners.

Export of principal refined petroleum products from New York for the week ending March 31, with comparison for the previous two weeks, follow:

	Mar. 31 gallons	Mar. 24 gallons	Mar. 17 gallons
Gasoline	2,938,626	304,260	1,357,000
Kerosene	245,350	326,490	254,520
Naphtha	456,550	63,000	3,524,200
Fuel oil	4,750	16,800	78,750
Lubricating oil	1,583,408	1,418,814	2,068,000
Petroleum (refined)	640,630 pounds	2,281,590 pounds	803,000 pounds
Petrolatum	51,619	53,762	.....
Paraffin wax	2,584,680	.....	4,387,461
Refined	.....	239,360	222,995
Scale	118,200	459,672	194,435

Thus far, there has been no appreciable increase in receipts of California gasoline at East Coast markets, although it is expected that the movement will expand later in the season, a number of contracts having been closed calling for deliveries during the summer months. The California gasoline market has been firming up in sympathy with the Gulf and Eastern market, and refiners are asking 7 cents or better for motor, with little buying interest shown at the moment at this figure.

There were 80,000 bbls. of California gasoline received in the East during the week ended March 31, as contrasted with 158,000 bbls. during the previous week and the same quantity in the week ending March 24. Last year, at this time, the weekly movement was 360,000 bbls. There was no gas or fuel oil received from California during the week ending March 31, while in the comparable week last year 75,000 bbls. of gas oil and 242,000 bbls. of fuel oil were received at East Coast terminals.

Imports of Petroleum

Imports of crude and refined oils at the principal United States ports for the week ended March 31 totaled 1,762,000 bbls., a daily average of 251,714 bbls., compared with 1,644,000 bbls., a daily average of 234,857 bbls. for the week ended March 24 and a daily average of 254,964 bbls. for the four weeks ended March 31.

(Barrel of 42 gallons)

	Week ended Mar. 31
At Atlantic Coast ports—	
Baltimore	150,000
Boston	195,000
New York	593,000
Philadelphia	368,000
Others	292,000
Total	1,598,000
Daily average	228,285
At Gulf Coast ports—	
Galveston district	50,000
New Orleans and Baton Rouge	.....
Port Arthur and Sabine district	74,000
Tampa	40,000
Total	164,000
Daily average	23,429
At all United States ports—	
Total	1,762,000
Daily average	251,714
Daily average four weeks	254,964

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended March 31 totaled 170,000 bbls., a daily average of 24,286 bbls., against 234,000 bbls., a daily average of 33,428 bbls. for the week ended March 24, and a daily average of 35,964 bbls. for the four weeks ended March 31.

(Barrel of 42 gallons)

	Week ended Mar. 31
At Atlantic Coast ports—	
Baltimore	80,000
Boston	.....
New York	90,000
Philadelphia	.....
Others	.....
Total	170,000
Daily average	24,286
At Gulf Coast ports—	
Daily average	.....
Total Atlantic & Gulf Coast ports—	170,000
Daily average	24,286
Daily average four weeks	35,964
Distribution of total California Receipts is as follows:	
Crude	90,000
Gasoline	80,000
Total	170,000

SHREVEPORT MARKETS FEATURED KEROSENE

SHREVEPORT, La., Apr. 9.—Kerosene settling to 5 cents after an advance of one-eighth last week to 4⅞ to 5 cents was the only feature of refined oil markets in this territory during the week. U. S. Motor gasoline remained at 7 to 7¼ cents. Gas oil and fuel showed no change. Increased runs of crude to stills for April reported in refiners estimates are due to anticipated larger seasonal calls rather than to immediate increased demand and are not expected to have any effect on prices. Refiners here have not been increasing stocks materially but have been shipping their products on current orders. Most of them would like to have enough kerosene to meet orders from their own plants but have been sacrificing this cut to turn out more auto fuel.

Brief Items for Petroleum Refiners

HAVANA REFINERY FIRE LOSS IS $2,000,000

HAVANA, Cuba, Apr. 7.—Fire has partly destroyed the West India Oil & Refining Co.'s refinery here but the greater share of the loss occurred when 14 of the 105 large crude oil storage tanks were destroyed. The total loss has been estimated at $2,000,000.

The big blaze burned for 12 hours. It is believed to have been caused when worn-out insulation allowed an electric light wire to come in contact with one of the steel tanks containing crude oil.

Upward of 60 casualties resulted from the night conflagration, but only one, a Cuban, was serious. Eleven of 150 sailors from the Wyoming came out of the fight with burns, but they were suffering more from exhaustion because of the terrific heat.

Residents of Regla, which is across the harbor from Havana, were taken aboard vessels.

The West India Oil & Refining Co. is a subsidiary of the Standard Oil Co. of New Jersey.

FIRE AT ROUSEVILLE PLANT

OIL CITY, Pa., Apr. 7.—Fire of unknown origin last night totally destroyed the wax house and barrel house of the Crystal Refining Co. at Rouseville, with all its equipment, with an estimated loss of from $25,000 to $30,000. Owners of the refinery state that the loss is covered by insurance and that steps will be taken at once for the construction of a new wax house to replace the burned structure.

FIRE AT PONCA CITY PLANT

PONCA CITY, Okla., Apr. 7.—The Empire Oil & Refining Co.'s plant suffered slight damage from fire here yesterday, when a light oil line burst and flames partly surrounded the crude oil battery. The fire was soon under control and the plant will be back to normal operating schedule within a week. The damage was estimated at $6,000.

REFINERY FOR EAGLE FORD

FORT WORTH, Tex., Apr. 7.—Everybody's Oil & Gas Co., Dallas Tex., has cleared and fenced a refinery site half mile west of Eagle Ford on the south side of the Texas & Pacific right of way near Dallas, to erect a 2,000-bbl. plant. The equipment from a 2,000-bbl. capacity plant at Greenville which has been idle for several years, was purchased by this company. The Greenville plant had been built by the National Petroleum Co. Everbody's company owns stations and trucks and is retailing refined products in Dallas.

RAIL RATE CUT

AUSTIN, Tex., Apr. 7.—The rate on the tank car movement of crude oil from Marland, Tex., to Fort Worth, Tex., was reduced from 22 cents to 16 cents by the State Railroad Commission. The applications for lower rates were made by the Kansas City, Mexico & Orient Railroad and the Missouri-Kansas-Texas Railroad.

NEW LAREDO REFINERY

LAREDO, Tex., Apr. 7.—The Motor Fuel Products Co., a recently organized concern with headquarters in the Sames-Moore Building, Laredo, and headed by S. P. Coblentz, has started construction work on a 2,000-bbl. refinery. A Jenkins cracking unit is being built by the Graver Corp. as a part of the new plant. The refinery is located within the city limits of Laredo and will run Mirando crude. It is expected it will be in operation by August 1.

MANY NEW REFINERIES UNDER CONSTRUCTION IN WEST TEXAS

Numerous refining units are being built or are under consideration in the West Texas and Panhandle fields and while only one of these may be considered a large refinery, the total, if operated at capacity, will add from 30,000 to 40,000 bbls. to the amount of crude now being run in that area. The bulk of their products is expected to enter into competition with the Oklahoma and Kansas refinery products even though freight rates out of West Texas are comparatively high.

At least seven refineries are being built or considered at present besides the ones previously announced and well under construction. Besides the Bluebonnet Refining Co.'s refinery and the new 2,500-bbl. plant under construction for the Wickett Refining Co. at Wickett, Joe and Louis Olson, brothers, of El Dorado, Ark., are to build a 3,000-bbl. capacity skimming plant at Wickett. An old 3,000-bbl. plant at Cisco, Tex., will be dismantled and moved to Wickett and reconditioned. E. M. Cora, formerly superintendent of the Witherspoon Refining Co.'s Somerset plant will have charge of construction and will superintend operations. Winkler County crude will be run at this plant.

The Valley Refining Co., also operating a plant at Wickett, is enlarging its plant to be able to run 4,000 bbls., which will bring the refining capacity of the present and proposed plants in Wickett to 13,000 bbls. All of these will run Winkler crude except the Wickett Refining Co.'s plant which will run the tops purchased from the Bluebonnet refinery.

Pyote is also being given considerable attention by companies intending to locate refineries in the West Texas fields. Construction work has been started on the Tonkawa Refining Co.'s 2,000-bbl. capacity skimming plant at that point. The plant is expected to be in operation in about nine weeks and it is being built by a company headed by Gene Constantin of Tulsa. The equipment is being moved to the new site from a plant that has been shut down for some time. Winkler County crude will be run.

The Crystal Oil & Refining Co. is said to be investigating the building of a refinery at Monahan, on the Texas & Pacific Railroad, near Wickett, but no definite announcement has been made regarding a decision to date.

Still further east, on the Texas & Pacific Railroad, the Odessa Refining Co. will build a 1,000-bbl. plant at Odessa. A 2,000-bbl. refinery including Jenkins cracking units is being built at Pampa by Reese Allen and associates of Wichita Falls. The same interests are now operating the Amarillo Refining Co. Gray County crude will be run and the plant will be in operation within the next 60 days. A site for a refinery has also been purchased at Sweetwater by Robert Thaves. Reese Allen is understood to be co-operating with Mr. Thaves in this plant and a line has been proposed running from Chalk-Robert Field to the plant at Sweetwater, 60 miles distant. At El Paso, the Pasotex Petroleum Co. (the Standard Oil Co. of California) has construction work under way at its 10,000-bbl. refinery. This will be the second largest plant in West Texas.

OIL COMPANY PLANE'S GOOD WILL TOUR

The Texas Company's new trimotor plane stops in Tulsa in its good-will flight over Southern states.

The Texas Company's tri-motor all-metal plane spent three days in Tulsa during the past week as part of the good-will tour being made through the southern states in which the company markets a large share of its products. The plane was built at the factory of the Ford company in Detroit, Mich., and the flight started from that point on February 21. Numerous stops have been made in the meantime to visit points in Kentucky, Georgia, Florida, Louisiana, Texas and Oklahoma. The plane will next visit cities in Arkansas and continue east to return to Tulsa about May 10 to participate in the "Tour of Oklahoma" along with many other planes. A trip to California is planned to immediately follow.

In addition to developing good will by making flights daily in the respective towns visited and inviting many to participate in these flights, the merits of The Texas Company's aviation gasoline and lubricating oils are demonstrated.

BENNETTE TO ADDRESS NEBRASKA OIL JOBBERS

Howard Bennette, managing director of the Western Petroleum Refiners Association will address the spring meeting of the Nebraska Independent Oil Men's Association which will be held at Kearney, Nebr., April 18 and 19. Mr. Bennette will speak on the subject, "From the Refiner's Viewpoint."

Several other speakers will address the meeting on various subjects of interest to oil jobbers. Following is the program for the two-day meeting:

Hotel Fort Kearney, April 18 and 19
Wednesday Morning, April 18

9 a. m.—Registration. Get acquainted with those present. The fee will include two noon luncheons and banquet.

10 a. m.—Board of directors meeting.

12:15 noon—Noonday luncheon. Entertainment furnished by the Kearney Chamber of Commerce.

Program—Seated as you are.

Address—"Why Link Up With Nioma," President S. A. Wassum, Tekamah, Nebr.

Address—"The Follies of 1927," B. L. Majewski, vice president in charge of sales of the Shaffer Oil & Refining Co., Chicago.

Address—"Lubrication Problems," Cy McKee, chief chemist for Nourse Oil Co.

Open forum discussion. Every jobber present please take part.

6:30 p. m.—Big banquet; entertainment.

Address — Cul N. Wright of Scottsbluffs, Neb.

Thursday Morning, April 19

10 a. m.—Closed session for Nioma members and those jobbers who wish to "Link Up With Nioma."

12 noon—Noonday luncheon; entertainment.

Program—Seated as you are.

Address—"From the Refiner's Viewpoint," Howard Bennette, managing director of the Western Petroleum Refiners Association.

Address—"Independent Oil Men of America in 1928," Lou Harrington, executive manager of the I.O.M.A.

WISCONSIN GASOLINE TAX AWAITING TEST

CHICAGO, Apr. 7.—At the last session of the Wisconsin Legislature a law was passed which attempted to equalize the situation for such dealers as were located in towns along the border across from a state in which there was no gasoline tax or a smaller tax than was collected in Wisconsin. The Valvoline Oil Co., which operates a station in Beloit, Wis., found that a competitor located in South Beloit across the border in Illinois was paying no tax and notified the state treasurer of Wisconsin that the Valvoline company should not be compelled to pay any tax according to the statute.

The state's attorney has ruled and so informed the state treasurer that every dealer must report his gasoline sales and pay the correct tax. According to the law mentioned the dealer may file a claim for a rebate to offset the reductions in price up to the amount of the tax that he was compelled to make by the fact that his competitor was not paying a tax. As there are doubts of the constitutionality of the amendment passed at the last session there seems little possibility that any dealer will secure this rebate if the claim is filed with the state treasurer until the law has been passed upon by the courts. The Bureau of Markets has recently suggested that a way to overcome the quantity discounts allowed by some companies on sales to large purchasers would be for the small buyers to combine their purchases and in this way secure the same reduction in price.

Natural Gasoline Manufacture

LOWER BOILING POINT FRACTIONS CONSIDERED

As a part of the program to extend the utilization of natural gasoline during the coming year the Natural Gasoline Association of America is considering research work which will develop an outlet for the lower boiling point fractions, particularly the propane and butane. In the production of stabilized gasolines this fraction is run to the dry gas mains and used as fuel, along with the permanent gases. To find a more profitable outlet for this fraction would mean an increased revenue and would be a step in conservation as well. Liquid gas, as this fraction is sometimes called, has been in use for some time as a convenient fuel at points where gas was not available, making a clean and very convenient fuel for cooking, etc. This is kept in the liquid form by closely fractionating the product and putting it in a suitable container to withstand pressures from a few pounds above atmospheric to 100 pounds. Utilization of this fraction as an enricher for artificial gas in replacing gas oil is also being studied. In this case shipment may be made in large steel cylinders in the same manner as helium gas is shipped. By using this as an enricher, greater flexibility in the manufacture of the artificial gas results through the elimination of oil coke and tars and the amount of enricher to be added can be controlled by simply opening a valve and allowing the gasoline fraction to be expanded into the gas holder.

The perfection of solvents to replace the more expensive coal tar derivatives in the many industries stands as another possibility. In certain areas the gas that is processed contains unsaturated hydrocarbons that may be sulphonated and converted into alcohols as a basis for many special solvents, esters and rare chemicals of high commercial value The extent to which this program may be developed remains but a matter of placing the production of the various products on a commercial basis, by determining in what quantities these various basic compounds occur in the natural gas of different areas, the possible market for production in great quantities and the quality of the respective products, compared with those made by other methods or from other basic materials.

BUILDING PLANT AT LEFORS

The Coltexo Corp., a subsidiary of the Columbia Carbon Co., is building a 20,000 gallon natural gasoline plant at Lefors, Tex. The absorption method of operation will be followed and equipment is being delivered to the plant. The plant is located in Gray County where a greater volume of rich gas is available and is being built to be easily enlarged should increased activities in that field justify its expansion.

OPERATING SCHAFER PLANT

The Cabot Carbon Co. is operating its Schafer ranch carbon-black plant in the Panhandle of West Texas at capacity now, an average of 15,000,000 feet of gas being burned per day. This is being supplied by the Skelly Oil Co. from wells located in the immediate vicinity of the plant.

BORGER CARBON PLANT

The third unit of the Kosmos Carbon Co.'s carbon-black plant at Borger, Tex., was first operated April 6 and the plant is now running at capacity. The plant is equipped to burn 10,000,000 cubic feet of gas daily.

"HIGH GRAVITY" NOT INDICATIVE OF AMOUNT NATURAL GASOLINE USED

The seasonal fluctuation in the movement of "high gravity" gasolines from refineries is often referred to, from the standpoint of marketing, as the cause for the increased or the decreased demand for natural gasoline. The word "high gravity" is misleading unless it is taken as "high" for a given endpoint gasoline. A 64-66 gravity 375 endpoint gasoline is ordinarily thought of as a typical high gravity gasoline, but less natural gasoline is ordinarily used to make this than is used to make the regular 58-60 gravity U. S. Motor grade. This may be taken as an example in the statement that "high gravity" and the relative demands for natural gasoline are not proportional in the ordinary way of thinking. No set rule may be applied regarding the amount of natural gasoline a refiner will blend with his refinery production to bring it up to a marketable volatility, but a fair idea of the relative amounts needed for the different grades may be calculated from the gravity of the ordinary refinery production and the specifications needed to be met for the respective grades.

PER CENT OF 84-GRAVITY NATURAL GASOLINE NEEDED TO BRING REFINERY GASOLINE UP TO MARKETABLE GRAVITY (Based on Running Seminole Crude)

Specifications on refinery production from stills	Specifications on finished product	Percentage of natural gasoline in the blend
54.0-54.5 gravity 450 endpoint	56.0-58.0 gravity 450 endpoint	5.1-13.3
55.0-55.5 gravity 437 endpoint	58.0-60.0 gravity 437 endpoint	8.8-17.2
56.0-56.5 gravity 437 endpoint	60.0-62.0 gravity 437 endpoint	15.8-24.1
58.5-59.0 gravity 400 endpoint	60.0-62.0 gravity 400 endpoint	4.0-13.7
62.5-63.0 gravity 375 endpoint	64.0-66.0 gravity 375 endpoint	4.8-16.3

Accompanying is a representative table, including the more common gasolines, and clearly brings out the fact that a wide range of flexibility exists regarding the per cent of natural gasoline which may be blended with the refinery production to meet the regular range of specifications. It also indicates the relationship that exists regarding the amount of natural gasoline needed to blend with the various grades to bring them up to the customary gravity range.

Many factors operate to vary the amount of natural gasoline used by the refiner. Most essential, probably, is the customers' desire for a gasoline of a certain gravity. The general tendency has been for the trade to demand the more volatile or "high gravity" gasolines. The refiner has not depended upon natural gasoline alone, however, to satisfy this demand. High gravity crudes, such as Seminole crude, yield a gasoline direct from the stills which needs less natural gasoline than the heavier crudes. Over the past year the running of Seminole crude has become a general practice in the Mid-Continent and has decidedly lessened the amount of natural gasoline needed to be used to bring the gasoline up to its former quality. But price is a strong factor, also, and when the actual refining needs are less, the supply in excess and natural gasoline prices are relatively low, the refiner will use a maximum amount, governed within reasonable ranges only by his ability to move it. Such a condition exists now. While refiners favor increasing the amount of natural gasoline in their shipments, they do not want to take in supplies which will mean adding gasoline to their already plentiful stocks, and in effect the demand for natural gasoline from refiners is not in keeping with its price.

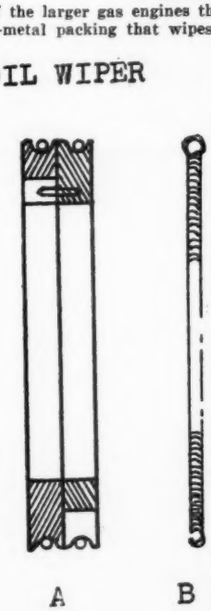
Likewise, there is not the incentive to ship the 60-62 gravity 437 endpoint grade that would exist during the winter season. Refiners say they prefer to hold their quality as uniform as possible throughout the year and in general increase the volatility of the gasoline for use during the winter months and then cut down on the amount of natural gasoline used during the summer season. They say they prefer to ship the 58-60 gravity 437 endpoint material instead of the 60-62 437 endpoint, as an alternate, even though the latter may be given preference by the customer and the refiner could show a margin of profit in the greater use of natural gasoline. Such an opinion is of course based on the thought that the present low natural gasoline prices will be of short duration and the policy of pushing the sale of 60-62 gravity 437 endpoint material would not prove profitable to them in the end.

But these factors are intangible and the choice of the course to follow is one usually set by the management. The factors affecting the amount of natural gasoline to be blended with the respective grades from the standpoint of the refinery operation are vital but do not influence fluctuation in the amount of natural gasoline used as much as the factors named previously. Vapor recovery systems, more efficient condensing units, greater production of cracked gasoline, and vapor-tight tankage, have all contributed to lessening the amount of natural gasoline needed by the refiner simply because this equipment, for the most part, conserves the light fractions of the gasoline that used to be lost through evaporation and had to be replaced formerly with natural gasoline. Over a long period of time these will have a tremendous effect on the amount of natural gasoline needed by refiners and can not be disregarded.

A Practical Suggestion

Oil Wipers

Most of the larger gas engines that are built today are equipped with floating, all-metal packing that wipes the excess oil from the piston rods. This mechanical feature was not embodied in some of the engines built as late as three years ago with the result that there are some 70 to 90-horsepower, direct-connected compressors which use as much as 70 gallons of heavy crankcase oil per month. An investigation will usually disclose that oil is being carried into the cylinders.



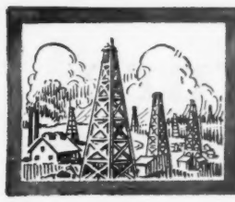
Gas engines after being used for some time often get the rods out of alignment, due to wear on the crosshead shoes or possibly the connecting rod. The asbestos packing impregnated with graphite, finely-woven wire, etc., may have become too hard or the glands may have been drawn up too tightly so that rod is scored, the result in all cases is leakage, waste of lubrication oil, and in some compression plants, off-color gasoline.

As a remedy for this trouble, in so far as oil is concerned, an all-metal oil wiper may be installed. There are several different designs but in principle they are almost identical, namely, that the packing is a babbitt-like metal made in from 3 to 16 segments, which are held snugly around the rod by about one-eighth inch wire spring. The packing is grooved and drilled in appropriate places so that the oil wiped from rod drains back into the crankcase. The packing floats and even if the rod is not aligned, the packing will fit and remove oil better than stationary packing.

There are several types that may be installed in an old compressor, one where a solid packing gland carries the rings and seats against a ring or two of asbestos packing in the stuffing box; another which consists of a split case carrying a number of the metallic rings and fits in the stuffing box with a gasket between the flange of case and the stuffing box face; there is still another type in which the stuffing box is removed and the case containing metallic rings is bolted to the wall plate. The simplest form of oil wiper, which may be used on engines having necessary clearance, consists of two or three rings of packing held by a spring around the rod with a thin plate bolted to the already installed packing gland. The plate is shouldered against two collars through which the bolts pass that allows free movement of packing.

The rods should be smoothed with emery cloth if cut badly, also the worse the condition of rod, the larger should be the number of segments in each ring used.

The natural gasoline industry is invited to contribute to the feature "A Practical Suggestion," which appears weekly. Payment will be made for all suggestions as soon as they are accepted.



REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Apr. 10	Apr. 3	Mar. 27
50-52 450 endpoint	.06¼	.06	.05¾ .06
56-58 450 endpoint	.06¼	.06	.05¾ .06
58-60 450 endpoint	.06¼ .06⅜	.06 .06⅛	.05⅞ .06⅛
*58-60 437 endpoint (U. S. Motor)	.06633	.06570	.06490
*60-62 437 endpoint	.0675	.06610	.06375
*60-62 400 endpoint	.07172	.06880	.06807
*64-66 375 endpoint	.07250	.07250	.07214
68-70 360 endpoint	.07½	.07¼ .07½	.07¼
64-66 437 endpoint (blend)	.06⅜	.06¾ .06½	.06¼ .06⅜

*Weighted average prices April 9 as reported by representative refiners.

Sales to jobbers only.

NORTH TEXAS—								
56-58 450 endpoint	.06¼		.06		.05¾	.05⅞
58-60 450 endpoint	.06¼		.06		.05¾	.05⅞
58-60 437 endpoint (U. S. Motor)	.06½	.06⅝	.06⅜	.06½	.06⅛	.06¼
60-62 400 endpoint	.06⅞	.07	.06¾		.06½	
64-66 390 endpoint	.07		.06¾		.06⅝	
64-66 375 endpoint	.07⅛	.07¼	.07⅛	.07¼	.06¾	
68-70 360 endpoint	.07¼	.07⅝	.07¼	.07⅜	.07	.07⅛
64-66 437 endpoint (blend)	.06⅜	.06½	.06⅛	.06¼	.06⅛	.06¼
NORTH LOUISIANA—								
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07	.07¼	.06¾	
ARKANSAS—								
58-60 437 endpoint (U. S. Motor)	.07		.06¾	.07	.06¾	
PENNSYLVANIA—								
52-64 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
54-56 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
58-60 Gasoline	.08¼	.08⅜	.08¼	.08⅜	.08¼	.08⅜
60 Gasoline	.08½	.08¾	.08½	.08¾	.08½	.08¾
62 Gasoline	.08¾	.09	.08¾	.09	.08¾	.09
64 Gasoline	.09¼	.09½	.09¼	.09½	.09¼	.09½
CALIFORNIA—								
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.08	.08½	.09	.09½
CHICAGO DISTRICT (Based on Group 3)—								
50-52 450 endpoint (Naphtha)	.06	.06¼	.05⅞	.06	.05¾	.06
56-58 450 endpoint	.06¼	.06⅜	.06		.05¾	.06
58-60 437 endpoint (U. S. Motor)	.06¾	.06⅞	.06½	.06⅝	.06⅜	.06½
60-62 400 endpoint	.06⅞	.07	.06¾	.07	.06⅝	.06¾
64-66 375 endpoint	.07⅛	.07¼	.07⅛	.07¼	.07	.07⅛
68-70 360 endpoint	.07¾	.07½	.07⅜	.07½	.07¼	.07⅜
64-66 437 endpoint (blend)	.06⅝	.06¾	.06⅜	.06½	.06¼	.06½

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Apr. 10	Apr. 3	Mar. 27
Grade A, 72-79.9, 375 e.p., rec. 90%	.04¾ .04⅞	.04⅛ .04¼	.04½
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅝ .04¾	.04⅛	.04¼ .04½
Grade B, 76-83.9, 375 e.p., rec. 85%	.03⅞ .04	.03⅝ .03¾	.04
Grade BB, 84-92, 375 e.p., rec. 85%	.03¾ .04	.03½	.03¾
Grade C, 80-92, 375 e.p., rec. 78%	.03¾ .03⅞	.03⅛ .03¼	.03¼ .03½
NORTH TEXAS—			
Grade A, 72-79.9, 375 e.p., rec. 90%	.04¾ .05	.04¼	.04½ .04⅝
Grade AA, 80-87.9, 375 e.p., rec. 90—	.04⅝ .04¾	.04⅛ .04¼	.04¼ .04½
Grade B, 76-83.9, 375 e.p., rec. 85%	.03¾ .04	.03⅝ .03¾	.04 .04⅛
Grade BB, 84-92, 375 e.p., rec. 85%	.03¾ .04	.03½	.03¾ .03⅞
Grade C, 80-92, 375 e.p., rec. 78%	.03¾	.03¼	.03¼ .03½
NORTH LOUISIANA—			
Grade AA, 80-87, 375 e.p., rec. 90%	.04⅞ .05	.04⅜ .04½	.04½
Grade BB, 84-92, 375 e.p., rec. 85%	.04 .04⅛	.03⅞ .04	.04¼
Grade C, 80-92, 375 e.p., rec. 78%	.04	.03⅜	.03½ .03¾
CALIFORNIA—			
75-85, 375-390 endpoint	.08 .09	.07¾ .08¾	.07¾ .08¾
CHICAGO DISTRICT (Based on Group 3)—			
Grade A, 72-79.9, 375 e.p., rec. 90%	.04¾	.04⅛ .04¼	.04½
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅝ .04¾	.04⅞	.04¼ .04½
Grade B, 76-83.9, 375 e.p., rec. 85%	.03¾ .04	.03⅝ .03¾	.04
Grade BB, 84-92, 375 e.p., rec. 85%	.03¾ .03⅞	.03½	.03¾
Grade C, 80-90, 375 e.p., rec. 78%	.03¾	.03⅛	.03¼ .03½

BURNING OIL

OKLAHOMA (Group 3)—	Apr. 10	Apr. 3	Mar. 27
41-43 water white Kerosene	.04¾ .04⅞	.04½ .04⅝	.04¾ .04½
42-44 water white Kerosene	.05⅛ .05¼	.04⅞ .05⅛	.04¾ .04⅞
NORTH LOUISIANA—			
41-43 prime white Kerosene	.05	.04⅞ .05	.04¾ .05
NORTH TEXAS—			
41-43 water white Kerosene	.04⅝	.04⅜ .04⅝	.04¼ .04⅝
40-42 water white Kerosene	.04⅜ .04½	.04¼	.04⅛ .04¼
ARKANSAS—			
41-43 water white Kerosene	.05	.05	.04¾ .05
PENNSYLVANIA—			
43 Kerosene Prime white	.05¾ .06	.05¾ .06	.05¾ .06
45 Kerosene water white	.06 .06¼	.06 .06¼	.06 .06¼
46 Kerosene water white	.06¼ .06½	.06¼ .06½	.06¼ .06½
47 Kerosene water white	.06⅝ .06¾	.06⅝ .06¾	.06½ .06¾
300 Mineral Seal	.07 .07¼	.07 .07¼	.07 .07¼
CALIFORNIA—			
38-40 water white Kero. (high burning test)	.05½ .06	.05½ .06	.05½ .06
Engine distillate, 43-45 445 endpoint	.07 .07½	.06½ .07	.07 .07½
Engine distillate, 42-44 480 endpoint	.06½ .07	.06¼ .06¾	.06½ .07
CHICAGO DISTRICT (Based on Group 3)—			
41-43 water white Kerosene	.05	.04½ .04¾	.04⅜ .04½
42-44 water white Kerosene	.05¼ .05½	.04⅞ .05	.04¾ .04⅞

FUEL OILS

OKLAHOMA (Group 3)—	Apr. 10	Apr. 3	Mar. 27
Below 18 Fuel Oil, per bbl.	.80	.80	.77½ .80
18-22 Fuel Oil, per bbl.	.82½ .85	.82½ .85	.82½ .85
22-26 Fuel Oil, per bbl.	.85	.85	.85
24-26 Fuel Oil, per bbl.	.85 .87½	.85 .87½	.85 .87½
26-30 Fuel Oil, per bbl.	.90	.90	.87½ .90
28-30 Fuel Oil, per bbl.	.95	.95	.92½ .97½
32-36 Gas Oil (dark)	.02⅝	.02½ .02⅝	.02½
32-36 Gas Oil (straw distillate)	.02⅝	.02⅝	.02⅝
36-38 Distillate	.03	.03	.03
38-40 Straw Distillate	.03 .03⅛	.03 .03⅛	.03 .03⅛
NORTH TEXAS—			
24-26 Fuel Oil (sellers' cars) per bbl.	.75 .80	.75 .80	.75 .80
32-36 Gas Oil (straw)	.02⅜	.02⅜	.02⅜
38-40 Straw Distillate	.03	.03	.03
NORTH LOUISIANA—			
18-20 Fuel Oil, per bbl.	.85 .90	.85 .90	.97½ 1.00
32-36 Gas Oil	.02¾ .03	.02¾ .03	.02¾ .03
ARKANSAS—			
33-36 Distillate	.03½ .03¾	.03½ .03¾	.03½ .03¾
32-36 Gas Oil (straw)	.03	.03	.02¾
16-22 Refinery Fuel Oil, per bbl.	.85 .90	.85 .90	.85 .90
GULF COAST (South Texas)—			
Gas Oil	.04¼	.04¼	.04¼ .04½
Fuel Oil, per bbl.	1.15	1.15 1.20	1.15 1.20
PENNSYLVANIA—			
30-34 Fuel Oil	.04⅞ .05⅛	.04⅞ .05⅛	.04⅞ .05⅛
36-40 Fuel Oil	.05 .05¼	.05 .05¼	.05 .05¼
CALIFORNIA—			
33-36 Distillate	.03½ .03¾	.03½ .03¾	.03½ .03¾
27-32 Distillate	.02½ .03	.02½ .03	.02½ 03
*15-20 Fuel Oil, Bunker (at tide water)	.85 1.00	.85 1.00	.85 1.00
15-20 Fuel Oil (cargo lots), per bbl.	.75 .85	.75 .85	.75 .85
27 plus Diesel, per bbl.	1.15 1.19	1.15 1.19	1.15 1.19
CHICAGO DISTRICT (Based on Group 3)—			
24-26 Fuel Oil (sellers' cars) Group 3, bbl.	.85 .90	.85 .90	.85 .90
22-26 Fuel Oil (sellers' cars) Group 3, bbl.	.85	.85	.85
18-22 (Group 3), per bbl.	.82½ .85	.82½ .85	.82½ .85
16-20 Smackover, per bbl.	.90 .92½	.90 .92½	.90 .92½
32-36 Gas Oil (zero)	.02¾ .03	.02¾ .03	.02¾ .03
32-36 Gas Oil (industrial)	.02½ .02⅝	.02½ .02⅝	.02½ .02⅝
36-38 Distillate	.03 .03⅛	.03 .03⅛	.03 .03⅛
38-40 Straw Distillate	.03⅛ .03¼	.03⅛ .03¼	.03⅛ .03¼

*Bunkers.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Apr. 10	Apr. 3	Mar. 27
100 vis., 2 color, 20-25 cold test	.06¼ .06½	.06¼ .06½	.06¼ .06½
100 vis., 3 color, 20-25 cold test	.06 .06¼	.06 .06¼	.06 .06¼
150 vis., 3 color, 20-25 cold test	.08¼ .08½	.08¼ .08½	.08¼ .08½
150 vis., 4 color, 20-25 cold test	.08 .08¼	.08 .08¼	.08 .08¼
180 vis., 3, 23-28 cold test	.09⅜ .10	.09⅜ .10	.09⅜ .10
180 vis., 4 color, 23-28 cold test	.09¼ .09¾	.09¼ .09¾	.09¼ .09¾
180 vis., 5 color, 23-28 cold test	.09⅛ .09½	.09⅛ .09½	.09⅛ .09½
200 vis., 3 color, 23-28 cold test	.09½ .10½	.09½ .10½	.09½ .10½
200 vis., 4 color, 23-28 cold test	.09⅝ .10¼	.09⅝ .10¼	.09⅝ .10¼
200 vis., 5 color, 23-28 cold test	.09¼ .10	.09¼ .10	.09¼ .10
240 vis., 3 color, 25-30 cold test	.13⅜ .14	.13¾ .14	.13¾ .14
240 vis., 4 color, 25-30 cold test	.13¼ .13½	.13¼ .13½	.13¼ .13½
240 vis., 5 color, 25-30 cold test	.12¼ .12½	.12¼ .12½	.12¼ .12½
280 vis., 3 color, 25-30 cold test	.15½ .16	.15½ .16	.15½ .16
280 vis., 4 color, 25-30 cold test	.15 .15½	.15 .15½	.15 .15½
280 vis., 5 color, 25-30 cold test	.14 .14½	.14 .14½	.14 .14½
Cylinder Stocks:			
600, steam refined, light green	.08 .09	.08 .09	.08 .09
600, steam refined, dark green	.06¼ .06¾	.06¼ .06¾	.06¼ .06¾
190-200 vis. @ 210 Bright Stock	.30 .32	.30 .32	.30 .32
150-160 vis. @ 210 Bright Stock	.22 .24	.22 .24	.22 .24
Waxes:			
124-126 White Crude Scale Wax	.03¼	.03¼	.03¼
PENNSYLVANIA—			
34 Neutral	.07½ .07¾	.07½ .07¾	.07½ .07¾
34 Sundebloom	.07¾ .08	.07¾ .08	.07¾ .08
36 Miners' Neutral	.06½ .06¾	.06½ .06¾	.06½ .06¾
150, 3 color	.27 .27½	.27 .27½	.27 .27½
180, 3 color	.31 .31½	.31 .31½	.30½ .31
200, 3 color	.33 .33½	.33 .33½	.33 .33½
220, 3 color	.34½ .35	.34½ .35	.34½ .35
600, steam refined	.09¼ .09½	.09¼ .09½	.09¼ .09½
635, steam refined	.10¼ .10½	.10¼ .10½	.10¼ .10½
650, steam refined	.11 .11½	.11 .11½	.11 .11½
600, Pennsylvania flash	.14 .15	.14 .15	.14 .15
*550, E filtered	.14½ .15	.14½ .15	.14½ .15
*600, E filtered	.15½ .15¾	.15½ .15¾	.15½ .15¾
600, E filtered	.14¾ .15¼	14¾ .15¼	.14¾ .15¼
600, D filtered	.22 .23	.22 .23	.22 .23
550 E filtered	.15½ .16	.15½ .16	.15½ .16
550, D filtered	.21½ .22	.21½ .22	.21½ .22
Pennsylvania Bright Stock	.26½ .27	.26½ .27	.26½ .27
†122-124 White Crude Scale Wax	.03¼ .03⅜	.03¼ .03⅜	.03¼ .03¼
124-126 White Crude Scale Wax	.03¼ .03⅜	.03¼ .03⅜	.03¼ .03¼

*At Warren, Pa. †At New York.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.07½ .08	.07½ .08	.07½ .08
No. 2 color, 200 vis., pale oil	.09½ .10	.07½ .08½	.07½ .08½
No. 3 color, 300 vis., pale oil	.11½ .12	.10 .11	.08½ .09½
No. 3½ color, 500 vis., pale oil	.12 .13	.12 .13	.12 .13
No. 4 color, 750 vis., pale oil	.14 .15	.14 .15	.14 .15
No. 5 to 6 color, 200 vis., red oil	.07½ .08	.07½ .08	.07½ .08
No. 5 to 6 color, 300 vis., red oil	.08½ .09	.08½ .09	.08½ .09
No. 5 to 6 color, 500 vis., red oil	.10 .10½	.09½ .10½	.09½ .10½
No. 5 to 6 color, 750 vis., red oil	.12 .12½	.12 .12½	.12 .12½
No. 2½ color, 200 vis., pale filtered	.11½ .12	.11½ .12	.11½ .12
No. 2½ color, 300 vis., pale filtered	.13 .13½	.13 .13½	.13 .13½
No. 2½ color, 500 vis., pale filtered	.15 .15½	.14 .15	.14 .15
No. 2½-3 color, 750 vis., pale filtered	.17½ .19	.17½ .19	.17½ .19
CALIFORNIA—			
130 vis., 2½-3 color	.09 .10	.09 .10	.09 .10

Due to changes in freight rates which have become effective during the past month Kansas quotations as published in the past will be discontinued. These rate changes have divided the state in regard to interstate shipments to certain sections and have also changed the rate relationship with adjoining groups.

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

200 vis., 2½-3 color	.10	.10½	.10	.10½	.10	.10½
300 vis., 3-3½ color	.10½	.11	.10½	.11	.10½	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
400 vis., 3½-4 color	.13	.14	.13	.14	.13	.14
Red Neutral:						
200 vis., 4½-5 color	.08½	.09	.08½	.09	.08½	.09
300 vis., 5-6 color	.09	.10	.09	.10	.09	.10
400 vis., 5-6 color	.10½	.11	.10½	.11	.10½	.11
500 vis., 4½-5 color	.11½	.12	.11½	.12	.11½	.12
500 vis., 5-6½ color	.11	.11½	.11	.11½	.11	.11½
600 vis., 6 plus color	.12½	.13	.12½	.13	.12½	.13

Note: Bright Stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Apr. 10	Apr. 3	Mar. 27
Gasoline, U. S. Motor, 58-60 437	.09¼	.09	.08¾
Kerosene, water white, 41-43	.07½	.07½	.07½
*Fuel Oil, bunker "C," 14-16, per bbl.	1.35	1.35	1.35
*Fuel Oil, Diesel, 28-30, per bbl.	2.00	2.00	2.00
Gas Oil, 28 plus	.05¼	.05½	.05½
25 pale Paraffin Oil	.10⅜	.12	.12
28 pale Paraffin Oil	.07¼	.07	.07
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.03¾	.04	.04
125-127 a.m.p., per lb.	.04	.04¼	.04¼
130-132 a.m.p., per lb.	.04⅜	.04½	.04¾
135-137 a.m.p., per lb.	.06	.06	.05½
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.02	.02	.02
Amber	.03⅜	.03⅜	.03⅜
Extra amber	.03¾	.03¾	.03¾
Cream	.06½	.06½	.06½
Lily White	.08¼	.08¼	.08¾
Snow White	.09¼	.09¼	.09⅜

*Lighterage, 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Apr. 10	Apr. 3	Mar. 27
Gasoline, U. S. Motor, 58-60 437, in cases	.2515	.2490	.2465
Kerosene, standard white, in cases	.1715	.1690	.1690
Kerosene, water white, in cases	.1815	.1790	.1790
600, steam refined cylinder stock, in bbls.	.16½	.17	.17
635, steam refined	.18	.19	.19
650, steam refined	.18½	.20	.20
600, Pennsylvania flash	.2-	.23	.23
630, Pennsylvania flash	.34	.35	.35
600, Warren E	.24	.25	.25
600, Oil City E	.23	.24	.24
Light 135 Bright Stock	.36	.40	.40
Dark 135 Bright Stock	.34	.38	.38

LOS ANGELES EXPORT PRICES

	Apr. 10		Apr. 3		Mar. 27	
Kerosene, water white	.05	.05¼	.05	.05¼	.05	.05¼
U. S. Motor Gasoline, 53-55 437 e.p.	.06¼	.06½	.06¼	.06½	.06¼	.06½

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

*Corsicana heavy (March 14, 1927)	$1.00
Other fields	See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE
Carson and Hutchinson

Below 31 gravity	$ .60
31-31.9	.65
32-32.9	.70
33-33.9	.73
34-34.9	.76
35-35.9	.79
36-36.9	.82
37-37.9	.85
38-38.9	.88
39-39.9	.91
40-40.9	.94
41-41.9	.97
42-42.9	1.00
43-43.9	1.03
44 and above	1.06

Wheeler County

Below 29 gravity	$ .60
29-29.9	.65
30-30.9	.70
31-31.9	.75
32-32.9	.80
33-33.9	.83
34-34.9	.86
35-35.9	.89
36-36.9	.92
37-37.9	.95
38-38.9	.98
39-39.9	1.01
40-40.9	1.04
41-41.9	1.07
42-42.9	1.10
43-43.9	1.13
44 and above	1.16
Gray County	See gravity table

Humble Oil & Refining Co. Magnolia Petroleum Co. February 21.

*Iatan	Same as North Texas
Crane-Upton-Crockett	See gravity table
*Glasscock	.60
†Chalk	.80

*Includes Howard County and Westbrook Fields. Marland Refining Co. pays $1.05 for Howard County crude, effective May 21.
†Magnolia Petroleum Co., Jan. 14, 1928.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Feb. 7, 1928)	$ .75
Bellevue (Feb. 24, 1927)	1.20
Urania (Nov. 18, 1927)	.75
East El Dorado (March 16, 1927)	1.00
Other fields	See gravity table

Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co. and Magnolia Petroleum Co.; (Magnolia Petroleum Co. posted Cotton Valley February 8); Urania, Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)

‡Grade A (March 14)	$1.20
Grade B	See gravity table
*Jenningg, La. (March 14)	$1.05
†Saratoga, Batson, Daytona (March 14, 1927)	$1.20
§Markham (March 14)	1.00

*Gulf Pipe Line Co. †Sun Pipe Line Co. ‡Humble Oil & Refining Co. and other major buyers. §The Texas Company.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

*Luling (May 5)	$1.00
†Mirando (March 14)	1.00
Rockdale-Minerva (April 15):	
Below 38 gravity	1.25
38-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31

(Continued on Page 146)

CRUDE OIL GRAVITY TABLE

Gravity—	Okla., Kans. N. C. Tex. 1	No. La. and Arkansas 2	Smackover, Ark. 3	Stephens, Ark 4	Gray County (Texas Panhandle) 5	Crane, Upton, Pecos, Crockett, Winkler Counties (West Texas) 6	Salt Creek, Wyo. 7	Grade B & Light Crude (G. Coast) 8	Somerset (South Central Texas) 9
24 and above	....	....	.90	....	....	....	....	....	....
Below 24	.76	....	.76	....	....	....	....	....	....
Below 25	....	....	....	....	....	....	....	1.16	....
24 to 24.9	.76	....	....	....	....	....	....	....	....
25 to 25.9	.81	....	....	....	....	....	....	....	....
Below 26	....	....	....	....	.60	.60	....	....	....
26 to 26.9	.86	....	....	....	.60	.60	....	1.19	....
27 to 27.9	.91	....	....	....	.65	.60	....	1.21	....
Below 28	....	.91	....	.85	....	....	....	....	....
28 to 28.9	.96	.96	....	.87	.70	.60	....	1.23	....
29 to 29.9	1.01	1.01	....	.89	.75	.60	1.01	1.25	....
30 to 30.9	1.06	1.06	....	.91	.80	.60	1.06	1.27	....
31 to 31.9	1.11	1.11	....	.93	.85	.60	1.11	1.29	....
32 to 32.9	1.16	1.16	....	.95	.90	.60	1.16	1.31	1.04
33 to 33.9	1.19	1.19	....	....	.93	.60	1.19	1.33	1.07
34 to 34.9	1.22	1.22	....	....	.96	.60	1.22	1.35	1.09
35 to 35.9	1.25	1.25	....	....	.99	.60	1.25	1.37	1.11
36 to 36.9	1.28	1.28	....	....	1.02	.60	1.28	....	1.13
37 to 37.9	1.31	1.31	....	....	1.05	....	1.31	....	1.15
38 to 38.9	1.34	1.34	....	....	1.08	....	....	....	1.17
39 to 39.9	1.37	1.37	....	....	1.11	....	....	....	....
40 to 40.9	1.40	1.40	....	....	1.14	....	....	....	....
41 to 41.9	1.43	1.43	....	....	1.17	....	....	....	....
42 to 42.9	1.46	1.46	....	....	1.20	....	....	....	....
43 to 43.9	1.49	1.49	....	....	1.23	....	....	....	....
44 to 44.9	1.52	1.52	....	....	1.26	....	....	....	....
45 to 45.9	1.55	1.55	....	....	....	....	....	....	....
46 to 46.9	1.58	1.58	....	....	....	....	....	....	....
47 to 47.9	1.61	1.61	....	....	....	....	....	....	....
48 to 48.9	1.64	1.64	....	....	....	....	....	....	....
49 to 49.9	1.67	1.67	....	....	....	....	....	....	....
50 to 50.9	1.70	1.70	....	....	....	....	....	....	....
51 to 51.9	1.73	1.73	....	....	....	....	....	....	....
52 and above	1.76	1.76	....	....	....	....	....	....	....

Column 1—Magnolia Petroleum Co. posted schedule February 21, 1928, making price below 30 gravity $.75 per barrel, 30-30.9 gravity $.90 and 31-31.9 gravity $1.05, with 3 cents increase per degree higher in gravity, taking 32-32.9 gravity at $1.16 as basis, with a top price of $1.76 for 52 and above.

Humble Oil Refining Co. posted $1.52 on all oil 44 gravity and above.

Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., Carter Oil Co., The Texas Company, February 21.

North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan and Panola (Magnolia only. Iatan posted a flat price of $.93 by Magnolia on January 14, 1928). Currie, Nocona, Moran and Corsicana light]; Texas, Prairie, Sinclair and Gulf; The Texas Company, Humble Oil & Refining Co., February 21.

Kansas—Prairie, Sinclair; Carter, The Texas Company, February 21.

Column 2—Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer and El Dorado only]; Standard Oil Co. of Louisiana, Texas Pipe Line Co., Louisiana Oil Refining Co., February 21 and Magnolia Petroleum Co. February 23.

Column 3—February 5, Louisiana Oil Refining Co. February 7, Standard Oil Co. of Louisiana, The Texas Company, Gulf Refining Co., Magnolia Petroleum Co. February 8. and Atlantic Production Co. February 10.

Column 4—Atlantic Oil Producing Co., Louisiana Oil Refining Corp., The Texas Company, February 22.

Column 5—Humble Oil & Refining Co., Magonlia Petroleum Co., February 21.

Column 6—Humble Oil & Refining Co., August 23; Marland Refining Co., Magnolia Petroleum Co., and Gulf Pipe Line Co., August 24.

Column 7—Midwest Refining Co., February 21. All crude over 37 gravity, $1.31 per barrel.

Column 8—Humble Oil & Refining Co. and other major buyers (schedule ends "35 and above"), March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. posted 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.

Column 9—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

CALIFORNIA CRUDE OIL PRICES
Standard Oil Co.-Union Oil Co. (Effective April 1, 1927)*

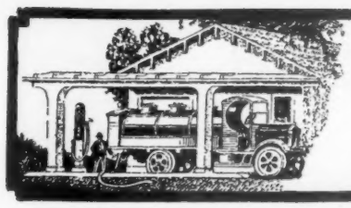
Gravity—	Fullerton Seal Beach Long Beach Huntington Beach Richfield Rosecrans-Dom'guez Torrance-Inglewood 1	Whittier La Habra Montebello 2	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Beiridge Buena Vista Hills Coyote 3	4	Santa Fe Springs 5	Conlinga 6	Wheeler Ridge 7	Santa Maria Ventura, Orcutt Salt Lake 8
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.85	.85	.75	.85	....	.75	.75	.85
16°	.85	.85	.75	.85	....	.75	.75	.85
17°	.85	.85	.75	.85	....	.75	.75	.85
18°	.85	.85	.75	.85	....	.75	.75	.85
19°	.85	.85	.75	.85	....	.75	.75	.85
20°	.85	.85	.77	.85	....	.76	.76	.85
21°	.86	.85	.79	.86	.85	.77	.77	.85
22°	.87	.85	.81	.87	.85	.78	.78	.85
23°	.88	.85	.83	.88	.85	.79	.79	.85
24°	.89	.86	.85	.89	.85	.80	.80	.86
25°	.90	.86	.87	.90	.86	.81	.81	.86
26°	.92	.87	.89	.91	.87	.83	.82	.87
27°	.94	.88	.91	.92	.88	.85	.83	.88
28°	.96	.89	.93	.93	.89	.87	....	.89
29°	.98	.90	.96	.94	.91	.89	....	.91
30°	1.00	.91	.99	.95	.93	.91	....	.93
31°	1.03	....	1.02	....	.95	.93	....	.94
32°	1.06	....	1.05	....	.97	.95	....	.97
33°	1.09	....	1.08	....	.99	.97	....	.99
34°	1.12	....	1.11	....	1.01	.99	....	1.01
35°	1.15	....	....	....	1.03	1.01	....	1.03
36°	1.18	....	....	....	1.06	....	....	1.06
37°	1.21	....	....	....	1.09	....	....	1.09
38°	1.24	....	....	....	1.12	....	....	1.12
39°	1.27	....	....	....	1.15	....	....	1.15
40°	1.30	....	....	....	....	....	....	....
41°	1.33	....	....	....	....	....	....	....
42°	1.36	....	....	....	....	....	....	....

*Column 1—Long Beach, Seal Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Fullerton, 14 to 30 degrees; Torrance and Inglewood, 14 to 28 degrees; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 2—Whittier crude, 14 to 22 degrees; Montebello, 14 to 30 degrees.

Column 3—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33 degrees; Lost Hills and Beiridge, 14 to 34 degrees.

Column 8—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura and Orcutt, 14 to 39 degrees. Posted by Union Oil Co.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns April 10.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago dist.	14 0	16 0	...	12.0
Decatur, Ill.	14 2	16 2	...	12.1
E. St. Louis	13 1	15 35	...	11 2
Joliet	14 4	16 4	...	12 3
Peoria	14.2	16 2	...	12.1
Quincy	14 2	16 2	...	11 9
Davenport, Ia.	17.5	19.5	3.0	12 3
Des Moines	15 9	17 9	3.0	12 3
Keokuk	17.5	19 5	3 0	12.3
Sioux City	17 1	19 1	3 0	11 9
Duluth, Minn.	15.5	17.5	2 0	12 9
Minneapolis	16 0	18 0	2.0	12 9
Mankato	14 1	16 1	2 0	12 7
La Crosse, Wis.	17.2	19 2	2 0	13 0
Milwaukee	16 1	18 1	2 0	11.9
Madison	16 3	18.3	2.0	12.1
Detroit, Mich.	17 8	19 8	3 0	13.7
Grand Rapids	17.7	19.7	3.0	13.6
Saginaw	17.9	19 9	3 0	13 8
Evansville, Ind.	17.0	19 0	3.0	13.0
Ft. Wayne	16 4	17.4	3.0	12 4
Indianapolis	17 2	19 2	3 0	12.2
South Bend	17.4	19 4	3 0	13 4
Fargo, N. D.	18.9	20 9	2.0	14 9
Huron, S. D.	19 5	21 5	4.0	13.9
Sioux Falls	18.0	20 0	4 0	13 4
*K. C., Mo.	14 9	16 9	3 0	10 6
*Springfield	16 8	18 8	3.0	11 5
*St. Louis	15.6	17.9	2.5	11 3
*St. Joseph	14 5	16.5	3 0	11 2
Wichita, Kans.	14 8	16 8	2 0	10 8
Bartlesville, Okla.	15 5	17.5	3.0	10 5

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	14.7	9 5
V. M. & P. naphtha	16 2	11 0
Cleaner's naphtha	18 0	12 0
Stanisol	19 0	12 5

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9 0
100 to 799 gallons	8.0
800 or more gallons	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

Tank wagon prices of gasoline subject to discount of 1 cent a gallon on dumps of 50 gallons or more throughout territory except Chicago district where discount applies only to dumps of 100 gallons. Kerosene subject to 1 cent discount on dumps of 50 gallons or more.

Outside the Chicago district, the following quantity discount schedule is in effect on monthly tank wagon deliveries of gasoline: 6,000 gallons or more, 1½ cents; 10,000 gallons or more, 2 cents; 15,000 gallons or more, 3 cents. These discounts include the 1 cent allowed on dumps of 50 gallons or more at one delivery.

Within the Chicago district, the following quantity discount schedule is in effect on tank wagon deliveries of gasoline: 750 to 2,000 gallons, one-half cent; 2,000 to 3,000 gallons, three-fourths cent; 3,000 to 6,000 gallons, 1 cent; 6,000 to 10,000 gallons, 1½ cents, 10,000 to 15,000 gallons, 2 cents; 15,000 gallons or more, 3 cents. These discounts are in addition to the special discount of 1 cent on dumps of 100 gallons or more at one delivery.

If the quantity bought during the year is equal to or exceeds 12 times the agreed monthly quantity, the discount is paid or credited on the entire quantity at the close of the term less the monthly payments made during the year.

*State tax 2 cents; remainder city tax.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
All Ohio points	17 0	19 0	3.0	14 5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.*

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	14 0	18 0	3 0	11 0
Ft. Worth	15 0	18 0	3 0	11 0
Houston	14 0	18 0	3.0	15 0
San Antonio	15.0	18 0	3.0	10 0
El Paso	17 0	20.0	3.0	16 0
Texarkana	16 0	20 0	3 0	12 0
Muskogee, Okla.	17 0	18 0	3 0	11 0
Okla. City	16 0	17.0	3 0	11 0
Tulsa	16 0	17.0	3 0	11.0
Ft. Smith, Ark.	18.0	19.0	5 0	11 0
Little Rock	20 0	21.0	5 0	12 0

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, one-half cent; over 2,000 gallons, three-quarters cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cent; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons a month, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases in the tank wagon discounts.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
*N.Orleans, La.	16.5	18.5	3 0	14 0
Baton Rouge	15 0	17 0	2 0	12.5
Alexandria	16 0	18 0	2.0	14 0
LaFayette	16.0	18 0	2 0	12 5
Lake Charles	16 5	18 5	2 0	14.0
Shreveport	16 5	18 5	2.0	13.0
Kn'xville, T'nn.	18 0	20 0	3 0	15 0
Memphis	17 0	19.0	3 0	14 0
Chattanooga	18 0	20 0	3 0	15.0
Nashville	18 0	20 0	3 0	15.0
Bristol	19.0	21 0	3 0	14 0
Lt. Rock, Ark.	20.0	22 0	5.0	12.0

*Tax of 3 cents includes city tax of 1 cent.
*Louisiana kerosene prices include 1-cent State tax and 1 cent parish tax.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	17 0	19 0	4 0	14 0
Augusta	19.0	22.0	4.0	16 5
Macon	16 0	19 0	4 0	13 5
Savannah	17 0	19 0	4 0	14.5
Birm'h'm, Ala.	18.0	21 0	4 0	14 5
Mobile	17 0	20 0	4 0	14 0
Montgomery	16.0	19.0	5.0	15 5
Clarks'le, Miss.	17 0	20 0	4 0	11.5
Jackson	17 0	20 0	4 0	11 5
Natchez	16 5	19 5	4 0	14.0
Gulfport	18 5	21 5	6 0	14 0
Vicksburg	16.5	19.5	4.0	14.0
Jack'ville, Fla.	18 0	21 0	5 0	11 5
Miami	20 0	23 0	5 0	14.5
Pensacola	19 0	22 0	5 0	13 0
Tampa	18 0	21 0	5.0	13.0
Lexington, Ky.	18.0	21 0	5 0	15 5
Covington	19 0	22.0	5 0	15 5
Louisville	18.0	21.0	5.0	15.0

In addition to the State tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline. Kerosene prices in Georgia include 1 cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene only. Pensacola tax includes 1 cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	16.0	*22.0	...	13 0
Philadelphia	16 0	*22 0	...	13.0
Scranton	16 0	*22 0	...	13 0
Allentown	16 0	*22 0	...	13 0
Altoona	16.0	*22.0	...	13.0
Erie	17.0	*16 0	...	13 0
Dover, Del.	19 0	22 0	3 0	13.0
Wilmington	19 0	22 0	3.0	13 0
Spring'd, Mass.	18 0	18.0	...	15 0
Worcester	18 0	18 0	...	15 0
Boston	18 0	18 0	...	15 0
Providence, R.I.	20 0	20 0	2 0	15.0
Hartford, Conn.	20.0	20.0	2 0	14 0
New Haven	20.0	20 0	2.0	15 0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	17 0	19 0	...	15 0
*New York	17 0	19.0	...	15 0
Buffalo	15.0	18 0	...	14.0
Rochester	15 0	18 0	...	14 0
Syracuse	17 0	19.0	...	15 0
Boston, Mass.	18.0	19 0	...	15.0
Augusta, Me.	21 0	23 0	4.0	15 0
M'nch't'r, N. H.	21 0	22 0	4 0	15 0
Burlington, Vt.	20 0	22.0	3.0	15.0

*Price in steel barrels.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	16 25	17.25	2 0	12 25
McCook	14 75	14.75	2 0	11 50
Norfolk	16.75	18 75	2 0	12 75
N. Platte	17 75	19 75	2.0	13.50
Scottsbluff	17 25	19 25	2 0	13 00

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	17.0	21 0	3 0	15 5
Pueblo	18 0	18.0	3 0	15 5
Los Angeles	16 5	20 5	3.0	15.5
Reno, Nev.	22 0	26 0	4 0	19 0
Portland, Ore.	17 5	21 5	3 0	16 5
Seattle, Wash.	16 5	20.5	2.0	16 5
Tacoma	16.5	20 5	2.0	16.5
Spokane	20 5	24 5	2 0	20 5
Phoenix, Ariz.	23 0	27 0	4 0	20.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	18 0	20 0	2 0	14 0
Newark, N. J.	18.0	20 0	2.0	14.0
Annapolis, Md.	20 0	23.0	4 0	12 0
Baltimore	20 0	23.0	4 0	10 0
Cumberland	20 0	23 0	4 0	14.0
Washington	18.0	21.0	2 0	12 0
Danville, Va.	21.0	....	5 0	14 0
Norfolk	21 0	24.0	5 0	12.0
Petersburg	21 0	24 0	5 0	14 0
Roanoke	21 0	24 0	5 0	14 0
Richmond	19 0	22.0	5 0	14 0
Ch'rist'n, W.Va.	20.0	23 0	4 0	14.0
Keyser	20 0	23.0	4.0	14.0
Parkersburg	18 0	21 0	4 0	14 0
Wheeling	20 0	23 0	4.0	14 0
Charlotte, N. C.	20.0	23 0	4.0	14 0
Hickory	20 0	20.0	4 0	14 0
Mt. Airy	20 0	20 0	4 0	14 0
Salisbury	20 0	23 0	4.0	14 0
Charlst'n S. C.	20.0	23.0	5.0	14.0
Columbia	20.0	23 0	5.0	14.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	17 0	19 0	3.0	14 5
Pueblo	17 0	19 0	3 0	14.5
Grand Jct.	20 5	22 5	3 0	18.0
Casper, Wyo.	17 0	19 0	3.0	13 0
Cheyenne	18 0	20 0	3.0	14 5
Butte, Mont.	22 5	22 5	3.0	19 0
Helena	22 5	24 5	3.0	19 0
Salt L'ke, Utah	20 0	22 0	3 5	17.0
Albu'que, N. M.	22.0	25 0	5.0	17 0
Boise, Idaho	23 5	25 5	4 0	19.0
Twin Falls	23 5	25 5	4.0	19.0

TANK WAGON CHANGES

March 28—Standard Oil Co. of Louisiana reduced kerosene 1 cent at Lafayette, La., to 12.5 cents.

April 3—Continental Oil Co. increased the gasoline tank wagon and station prices 1 cent throughout New Mexico.

April 4—Standard Oil Co. of Louisiana increased the gasoline tank wagon price 1 cent throughout Louisiana.

April 5—Standard Oil Co. of Louisiana increased the gasoline tank wagon and station price 1 cent in Little Rock, Ark., to 20.0 and 22.0 cents.

April 6—Standard Oil Co. of Louisiana made the following changes in its Tennessee retail gasoline schedule of prices: Memphis, station price was advanced one-half cent; Chattanooga, tank wagon price was reduced 1½ cents; Chattanooga, station price was reduced 2½ cents; Knoxville, tank wagon price was reduced 1½ cents; Knoxville, station price was reduced 2½ cents; Nashville, station price was reduced 1 cent; and Bristol, station price was reduced 1 cent.

TREND TOWARD HIGHER PRICES IN GULF COAST

HOUSTON, Tex., Apr. 10.—A tendency to strengthen was apparent in the heavier viscosity Gulf Coast neutral oils Monday and Tuesday and indications pointed to possible general price advances. A good gallonage movement the past month has lowered stocks of these grades to a healthy point and although no important business was placed the past week buyers Tuesday were finding increasing difficulty in filling orders at low prices. One seller Tuesday was offered 10⅝ cents for a small quantity of 500 viscosity red oil although his material up to now has been available from some sources as low as 9½ cents.

The bottom Tuesday apparently was 10 cents with the market moving also at 10½ cents. The 500 viscosity pale filtered oil also was commanding a higher figure with the bulk now going at 15 to 15½ cents. There is no particular demand for the lighter viscosity oils but as these are not made freely at this time, market is steady.

The fuel oil situation continued sluggish and with several sellers attempting to move some surplus there was no indication of any steadying Tuesday. Bunker C fuel is fairly free at $1.15. There also is considerable extra heavy fuel not meeting Bunker C specifications which is available at a 90 cents to $1 price.

MAGNOLIA P. L. STATEMENT

The Magnolia Petroleum Co.'s pipe line runs from the Oklahoma-Kansas area in March were 2,205,763 bbls. or 71,154 bbls. per day; shipments 1,873,776 bbls., an average of 60,444 bbls. per day; stocks 7,973,596 bbls., an increase over the stocks at the close of February of 375,190 bbls.

COLONEL STEWART RETURNS

NEW YORK, Apr. 7.—Col. Robert W. Stewart, chairman of the board of directors of the Standard Oil Co. of Indiana, has returned from Europe on the Ile de France.

CRUDE OIL PRICES

(Continued from Page 145)

*Thrall	...
Callihan (May 15)	1.76
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co. Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.
(Effective March 14)

Rock Creek, Wyo. (March 12)	$1.25
Salt Creek	See gravity table
Big Muddy (March 12)	$1.25
Mule Creek (May 1)	1.10
Grass Creek, heavy	.90
Grass Creek, light	1.33
Elk Basin (March 12)	1.33
Lance Creek (March 12)	1.33
Poison Spider	1.00
Notches	.65
Rex Lake (February 22)	1.10
Osage	1.33
Lost Soldier (contract)	.95
Greybull-Torchlight	1.33
Hamilton Dome	.85
Cat Creek (Mont.)	1.33
Sunburst (Mont.) (Jan. 25, 1928)	1.50
Arteaia (March 12)	1.00
Hogback (N. Mex.) (March 14)	1.33

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective December 17)

Penna Grade Oil in New York Transit Line (New York)	$3.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.65
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	2.65
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.60
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.35
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (February 9, 1928)	1.35
Corning 35-cent grade oil in Buckeye Pipe Line Co.'s line (December 19)	1.45
Corning 25-cent grade oil in Buckeye Pipe Line Co.'s lines (December 19)	1.45
Somerset Oil in Cumberland Pipe Line lines (Kentucky) (February 9, 1928)	1.45
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (August 1)	.95
Keister (Pennsylvania) (August 1)	1.10

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective March 14, 1927)

Lima (February 10)	$1.55
Wooster	1.57
Illinois (February 23, 1928)	1.50
Indiana (February 10, 1928)	1.32
Princeton (February 23, 1928)	1.50
Plymouth (February 23, 1928)	1.23
Waterloo (November 17, 1926)	1.35
*Western Kentucky	1.32
**Saginaw, Mich., Saginaw Sand (February 10)	1.89
**Saginaw, Mich., Berea Sand (February 10)	1.79
†Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)	1.50
‡Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (March 16, 1927)	1.50
§Oil Springs (Canada) (February 10, 1928)	2.02
§Petrolia (Canada) (February 10, 1928)	1.95

*Posted by Ohio Oil Co.
†Posted by Paragon Development Co.
‡Posted by Stoll Oil Refining Co.
§Posted by Imperial Oil Co., Ltd.
**Posted by Sun Oil Co.

MEXICAN CRUDE

Note—Due to the fact that the exportation of Tuxpam light crude oil has become a negligible factor, prices will no longer be published.

*Panuco heavy (f.o.b. Mexican ports)	$1.18

*$1.15.

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Oil Securities Consistently Strong

Move in Sympathy With General Trend of the Industrial Market, Closing Week Fractionally Higher

The past week was a period during which the oil stocks were consistently strong. Moving in sympathy with the trend of the general industrial market, the oils gained ground every day, and closed the week fractionally higher. The movements initiated by leaders of the oil industry in various sections of the country, movements which are calculated to prevent the daily oil production from getting further out of balance with consumption, have had a good effect in Wall Street, according to reports.

The gains of last week in the oils were shared by companies in every branch of the industry and operating in almost every part of the country. Among them were Standard of California; Houston Oil, Amerada, Barnsdall and Prairie Oil & Gas.

Mid-Continent Petroleum

Report of Mid-Continent Petroleum Corp. and subsidiaries for the year ended December 31, 1927, shows profit of $3,298,575 after interest, depreciation, depletion, abandonment and surrendered leaseholds, etc.

"While the year 1927 was not a good one in the oil industry, Mid-Continent Petroleum Corp. paid off more than $1,000,000 of its bonded indebtedness, reduced its current liabilities by more than $1,000,000 and increased its properties in the amount of over $5,500,000," Jacob France, president, states:

"All products included in the inventory are carried at less than market, having been adjusted during 1927. Net crude oil production for the year was 50 per cent greater than in preceding year."

Consolidated income account for year 1927 compares as follows:

	1927	1926
Oper. profit	$11,188,982	$16,994,571
Int., etc.	817,867	876,405
Fed. tax	.....	762,342
*Depr., depl., etc.	7,072,540	6,740,113
Profit	$3,298,575	†$8,615,711
Pfd. divs.	450,695	452,065
Com. divs.	2,030,568	.....
Surplus	$817,402	$8,145,346

(Includes leaseholds abandoned and surrendered, etc.
†Net income after federal taxes.

Vacuum Oil Co.

Stockholders of the Vacuum Oil Co. at their annual meeting approved the proposed increase in authorized capital stock from $70,000,000 to $175,000,000, making it possible to distribute the 100 per cent stock dividend which was determined upon some time ago. The shares are of $25 par value.

The outstanding capital stock as of December 31, 1927, was $62,809,550, so that after the payment of the stock dividend there will remain about $50,000,000 of authorized stock. The company plans to use part of this stock in acquiring other properties, mainly in this country. Officials indicated some time ago that the company was undertaking an ambitious expansion program.

It is understood that the Vacuum is working out a plan for co-operating with the Anglo-American Oil Co., Ltd., in the marketing of gasoline and kerosene in the British Isles. The details have not been announced, but the plan, as Wall Street understands it, is to form a separate company in which the Vacuum and the Anglo-American will each have a 50 per cent interest.

For the year ended on December 31, 1927, Vacuum reported a net profit of $25,559,899 after depreciation, inventory adjustment and federal taxes, comparing with $24,133,655 in 1926. The balance sheet reveals current assets of $93,118,778, compared with $97,378,317 a year previously. Current liabilities were $9,428,247, against $7,849,383 at the end of 1926, leaving a net working capital of $83,690,531, comparing with $89,528,934 a year previously.

Cash and marketable securities were $32,103,587 as against $21,851,105, and materials and supplies, $34,456,674, compared with $36,178,536 in 1926. Among the assets, stocks of foreign companies were carried at $37,604,497, as against $20,629,871. Total assets were $156,798,136, compared with $141,520,066. The company has no floating or funded debt, and profit and loss surplus on December 31 stood at $81,717,323, equal to 130 per cent on the $62,809,550 capital stock issued.

New Russian Contracts

Several additional contracts have been concluded between Amtorg Trading Corp. and Vacuum Oil Co., whereby the latter will purchase additional Soviet oil products for sale in new markets, according to announcement by Saul G. Bron, chairman of Amtorg Trading Corp. The new contracts cover a period of six years.

Total value of oil products to be delivered annually by Soviet Oil Syndicate, under all contracts with Standard Oil Co. of New York and Vacuum Oil Co. is about $10,000,000.

Statement announcing the additional purchases by Vacuum says:

"During the sojourn here of A. Kalnin, vice president of Soviet Oil Syndicate (Naphtha syndicate), the Amtorg Trading Corp. concluded several new contracts with the Vacuum Oil Co. for the sale of Soviet oil products in new markets. The new contracts are for the term of six years."

Both Standard Oil Co. of New York and Vacuum Oil Co. made contracts last summer covering the purchase of Russian oil. At that time Standard of New York was understood to have an agreement for upwards of 3,500,000 bbls. of Russian fuel oil, while Vacuum's purchases were largely crude for its European refinery and refined oils for the Near East. These transactions were the subject of controversy with Royal Dutch-Shell interests, which opposed purchases of oil from Soviet Russia.

Indian Refining Co.

In his report to the stockholders of the Indian Refining Co., President J. H. Graham says:

"The plant manufactured 93,955,622 gallons of gasoline in 1927, the largest production in the company's history; though, thanks to the increased efficiency of the refinery, the total amount of crude oil used in its production was less by 500,000 bbls. than that required in 1924 to produce the 57,216,972 gallons manufactured in that year. Sales of gasoline in 1927, through company-owned pumps and service stations, were also largest in the company's history—70 per cent of the total gasoline manufactured by our plant.

"Net sales for 1927 in dollars were only $19,024,232.13 compared with $23,657,732.21 for the year 1926. This decrease of more than $4,500,000 in the face of substantial increases in gallons of production and sales was due to the marked shrinkage in prices prevalent throughout the industry during the year. Operating expenses in all departments for the year were lowest since the enlargement of the company in 1920.

"The program of reconstruction was carried on vigorously during the year 1927, a total of approximately $2,500,000 being expended on fixed properties. This work was divided about three-fifths to the marketing facilities and two-fifths to the refinery. The plant having been previously so reconditioned as to give a satisfactory gasoline yield, major effort this year has been expended on new precesses and equipment to improve the values of our lubricating oils. This work should be completed before the middle of the year, when the reconstruction program, begun four years ago, will be consummated; and refinery will be in a position to produce an even better oil."

Superior Oil

Superior Oil Corp, has issued its report for the year ended December 31, 1927. Consolidated balance sheet shows total assets of $5,344,599, compared with $6,797,571 in 1926, and profit and loss deficit of $3,556,544 against $3,011,485. Current assets amounted to $693,646 and current liabilities to $262,229, compared with $1,187,858 and $1,028,641 respectively, in preceding year.

Consolidated income account for year ended December 31, 1927, shows net loss of $545,058 after charges, depreciation and depletion, the same as shown in preliminary statement. This compares with net profit of $75,850 or 6 cents a share earned on 1,103,238 no par shares of stock in 1926.

Consolidated balance sheet of Superior Oil Corp. as of December 31, 1927, compares as follows:

Assets	1927	1926
*Leaseholds, plt., etc.	$4,618,410	$5,508,190
Cash	106,958	526,385
Inventories	461,846	362,925
Accts. & Bills rec. (curr.)	124,843	298,548
Other accts & bills rec.	.....	51,315
Def. items	32,542	50,208
Total	$5,344,599	$6,797,571
Liabilities		
Capital stock	†$8,328,215	$8,318,215
Bonds	310,700	462,200
Notes pay.	160,000	320,000
Accts. pay.	59,302	158,034
Accrd. accts.	42,926	50,607
Deficit	3,556,544	3,011,485
Total	$5,344,599	$6,797,571

*After depreciation and depletion.
†Represented by 1,121,238 no par shares including treasury stock.

Plymouth Oil Co.

Statement of Plymouth Oil Co. and subsidiaries as of January 1, 1928, shows total assets of $22,483,760, comparing with $22,028,774 on January 1, 1927, while surplus amounted to $4,222,642 against $4,585,735. Current assets totaled $1,909,122 and current liabilities $646,436, comparing with $2,929,888 and $493,481 respectively at close of previous year.

Consolidated balance sheet of Plymouth Oil Co. and subsidiaries as of January 1, 1928, follows:

Assets: Cash, $275,003; accounts receivable, $468,465; notes receivable, $33,695; inventories, $1,131,959; funds in escrow, $774,214; mortgage receivable, $16,500; property account, $16,697,505;

LIST OF ACTIVE PETROLEUM STOCKS

Stocks—	Par	Clos. Quot.—Apr.9	Clos. Quot.—Apr.2	1928—High	1928—Low	1927—High	1927—Low	1926—High	1926—Low
Amerada Corp.	..	34⅝	34½	35⅝	27½	37½	27⅝	32¾	24¾
Atlantic Refining, com.	100	124	118	121¾	95⅝	131⅝	107	128¾	97
Barnsdall "A"	25	23½	22⅝	26½	22⅛	35½	20¾	32½	23½
California Petroleum, com.	25	27⅝	26½	27⅝	24	32⅝	20	38⅛	30⅞
Houston Oil	100	158⅝	161⅝	166⅝	127	175⅝	60⅛	75	50¼
Independent Oil & Gas	..	26⅝	26⅝	28¼	21⅝	32⅜	17⅝	34	20¼
Louisiana Oil	10	11¼	11⅝	12⅜	9⅜	18½	10½	19⅝	12
Maracaibo	..	15⅜	16	18½	12½	22⅜	12	27⅜	18⅝
Marland	..	40⅞	40	38⅝	33	58⅛	31	63⅜	41¼
Mid-Continent Petroleum	..	28⅝	28½	29½	25½	39⅝	25½	41	25⅝
National Supply	50	93½	94	97⅞	90	95⅜	76	84⅞	55½
Oil Well Supply	25	32½	32¼	41	33	44⅝	31¼	36	30
Pan American, B	50	46¼	44⅝	46⅝	37⅜	66⅝	45⅛	72⅝	56½
Pan American, Western B	..	24⅝	23½	25	18¼	37⅞	16⅜	46	34
Phillips Petroleum	..	40⅞	40⅞	43½	35¼	60⅛	36½	54⅞	42½
Producers & Refiners	50	22⅜	21⅝	26	16	33⅞	16⅜	26	11
Pure Oil, com.	..	23⅞	22½	27½	19	33½	25	31	25⅝
Royal Dutch, N. Y., sh.	13.40	47	46	48⅝	44⅝	54⅛	44½	57⅝	49⅝
Shell Transport	10	44	43½	42⅞	39⅝	49	41½	48⅞	42
Shell Union, com.	..	27¼	27½	27⅝	23¼	31⅜	24⅝	30⅞	24
Simms Petroleum	10	22⅞	23	25½	18	23⅞	14¼	26⅝	16½
Sinclair Consolidated	..	28	27¼	29⅝	17½	22⅜	15⅛	24⅞	16¾
Skelly Oil	25	31⅝	28¾	28⅞	25	37⅜	24⅛	37½	27
Standard of California	25	59	57	57½	53	60¾	50⅝	63½	54
Standard of New Jersey, com.	25	40⅞	41⅝	41⅝	37¾	41⅝	35⅛	46⅝	37½
Standard of New York	25	30⅝	30¼	31⅝	28⅜	34½	29⅜	47½	30⅝
Sun Oil Co.	..	42	42	42¾	31½	34⅝	30	41¼	30⅛
The Texas Company	25	54⅞	53⅜	55⅝	50	58	46	58	48
Texas Pacific Coal & Oil	10	13½	13¼	17	12¼	18⅜	12	19½	12⅛
Tide Water Associated	..	15⅞	15⅞	17¼	14⅜	19¼	15⅝	21	17
Transcontinental	..	8⅜	8⅜	10½	7⅛	10⅜	3⅜	5½	3
Union Oil of California	25	50⅝	50⅛	51	42⅜	56½	39⅝	53⅜	37½
Union Tank, com.	100	120	121½	125	119¼	126	94	120⅝	84¼
White Eagle Oil & Refining	..	21½	20⅝	24¼	20¼	27½	21⅜	29⅜	25⅛
Standard Oils									
Anglo-American Oil	£1	20½	20½	22⅝	18⅛	21⅝	17⅛	19⅜	16⅛
Borne Scrymser	25	50	50	56	50	69	49½	75	65
Buckeye Pipe Line	50	73½	70	70	58	59	45	69½	42
Chesebrough Manufacturing Co.	25	134	134	149⅝	117¼	136	76½	81¼	63
Continental	10	17⅝	17⅝	23	16	22⅝	16¼	25⅞	10¼
Cumberland Pipe Line	100	97	97	105	89	‡137	90	137	102
Eureka Pipe Line	100	70½	71	72⅝	64⅛	66	47	43⅝	43
Galena S'gnal, com.	100	7	7¼	7⅝	4	13½	4½	32½	9⅝
Humble Oil & Refining Co.	25	65¼	64⅝	68	58½	67⅝	54	99⅝	52
Illinois Pipe Line	100	199	200	206	176½	181½	123⅜	144	131
Imperial Oil	..	60⅞	61⅝	65¼	56⅞	64⅜	37⅜	39⅜	32¼
Indiana Pipe Line	50	81	82	84⅜	75	93	61	68	52¼
International Petroleum Co.	10	39	38½	43	35	36⅜	28¼	35¼	28⅜
National Transit Co.	12.50	30¼	31¼	28½	20½	23¾	13¼	30⅜	27¼
New York Transit	100	54	54½	54	38½	42	31¼	61½	37¼
Northern Pipe Line	100	116	117	117⅜	94	96	70	80¼	64
Ohio Oil Co.	25	60⅜	61¼	66½	58½	66	52	67¾	55⅝
Penn-Mex Fuel	25	41	44⅝	44⅝	33	36⅛	13	24¼	15
Prairie Oil & Gas	25	49⅞	49⅝	50¼	47⅝	55⅛	45⅝	60¼	49
Prairie Pipe Line	100	217	217	224	184	189¼	132	137½	122½
Solar Refining Co.	100	175	165	178	175	‡201½	178	212	184½
South Penn Oil	25	41½	42	42	36¾	41½	34½	50	30
Southwest Pa. Line	100	88	88	88¾	70	78	55½	56	47½
Southern Pipe Line	50	30½	32½	33½	21	39	18½	27	34
Standard of Indiana	25	77⅛	76⅝	80½	71½	80¼	64⅝	70½	60½
Standard of Kansas	25	21½	21⅝	21⅝	15	20⅞	15⅝	36½	26½
Standard of Kentucky	25	128	127½	133	124	125½	111½	134⅝	107
Standard of Ne'raska	25	44⅜	42	43	40⅛	49½	43	51⅛	42
Standard of Ohio, com.	100	74¾	73	79⅝	72	81½	72	362	192½
Swan & Finch, com.	25	16	16	17⅜	16½	21	11½	21	18
Vacuum Oil	25	151½	144⅝	149	136⅝	147	95⅛	109⅝	94½
Miscellaneous									
Gulf Oil Corp. of La.	25	114	113	117⅛	101⅛	116	86¼	95	82½

*Bid, no sales. †Old stock. †New stock. §Ex-dividend.
Quotations furnished by W. J. Wollman & Co.

The Oil and Gas Journal weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb was as follows:

Apr. 9	67.21	Mar. 5	62.56	Jan. 30	62.75
Apr. 2	65.28	Feb. 27	62.54	Jan. 23	63.49
Mar. 26	64.48	Feb. 20	60.77	Jan. 16	63.87
Mar. 19	62.79	Feb. 13	61.02	Jan. 9	63.55
Mar. 12	62.07	Feb. 6	62.03	Dec. 31	62.09

investments, $2,891,408; deferred charges $195,011; total, $22,483,760.

Liabilities: Accounts payable, $444,599; notes payable, $200,000; unclaimed wages, $57; accrued interest, $1,781; federal tax reserve, $470,132; depreciation reserve, $1,887,562; depletion reserve, $1,224,684; reserve for depletion of leasehold appreciation, $7,329,801; subsidiary stock not held by Plymouth Oil Co., $1,000,000; capital stock (par $5), $5,250,000; donated surplus, $452,502; earned surplus, $4,222,642; total, $22,483,760.

Pennok Oil Corp.

The Pennok Oil Corp. reports for 1927 a net loss of $6,371 after interest, abandoned wells and leases, depletion, depreciation and other expenses, against a net profit for 1926 of $307,096 after charges and federal taxes, equivalent to $2.04 a share earned on 150,000 shares of no par value common stock.

John L. Weeks, president of the corporation, says net crude oil production amounted to 280,781 bbls., or a daily average of 769 bbls., on which the average price realized was $1.38 a barrel, or 93 cents less than the previous year. The company paid off its 6 per cent notes in 1927 without new financing and at the start of 1928 had $124,035 net current assets. During 1927, it acquired 2,500 acres for $48,693.

Directorate Changes

Henry Fisher has been elected a director of the Standard Oil Co. of New York.

R. W. Pomeroy was elected a director of Simms Petroleum Co. succeeding Elton Parks.

R. C. Holmes, president of The Texas Corporation, has been elected a director of the California Petroleum Corp.

H. L. Stone was elected a director of the Gulf Oil Corp. to fill vacancy caused by the death of Judge J. H. Reed.

PROPOSED PLAN CHECKS NEEDLESS OPERATIONS

(Continued from Page 31)

Field is fully aware that there is a serious overproduction of oil in the United States and adjacent countries; that there is potential additional new production of perhaps 1,000,000 bbls. per day; that every new well brought in merely aggravates the condition of economic waste to which the Federal Oil Conservation Board has called attention and that this situation can only be remedied by the prompt, whole-hearted and unselfish co-operation of the producers.

This committee therefore recommends that every prospective unnecessary well be postponed; that in those cases where lease conditions or offset requirements make drilling imperative and there is no local co-operative organization or pooling arrangement, such facts be reported to this committee in order that it may lend assistance toward the organization of local co-operative committees to utilize or restrict the production from new pools thus opened.

In order to postpone the opening of new producing areas until the oil is needed, it is further recommended that those units in the industry which have pursued the practice of assisting the testing of new structures by purchase of acreage or contribution of dry hole money now announce a policy of refraining from so doing; that they will in no way encourage the drilling of such exploratory wells except where the prospective area has been unitized, a pooling arrangement made or this committee's approval obtained.

The committee understands its jurisdiction to extend to wildcat wells and that it is not to function in regard to development wells in established pools nor to areas such as Seminole where local committees are or may hereafter be functioning. In order to keep in touch with wildcat drilling and to facilitate the handling of applications for approval of contemplated wells, an umpire is to be appointed as a representative of the committee, and all applications or communications should be addressed to such umpire.

Whenever an operator desires to drill a wildcat well he is requested to notify this committee through its umpire and secure its approval before beginning operations. Notice of the action of the committee on such application will be sent the applicant by mail and in case he is dissatisfied with the ruling of the committee he will be accorded a full and complete hearing. Where such a well is drilled without the approval of the committee and is not a part of a pooling arrangement, it will be the duty of the umpire to report such operator and the location of the well to the corporation commission, if located in Oklahoma, and to the other operators if located in Kansas.

All operations of this committee in Oklahoma will be carried on in co-operation with the corporation commission and in so far as said commission has jurisdiction its authority will be invoked and its approval sought.

It shall be the consistent purpose of this committee to act with the greatest dispatch on all matters to be dea't with by them under this plan, in order that no operator will be embarrassed to an undue extent in the conduct of his business.

FAITH IS REVIVED IN LIGHTNING ROD

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exactly simulate or anticipate all practical conditions, it should be of great help in solving the problems of protection.

"Sparks can occur in oil tanks by a direct stroke, electro-static induction or by electromagnetic induction. A direct stroke can take place when the storm center is over the oil tank and set fire to wooden roofs, ignite oil directly or indirectly, or melt thin metal plates. Sparks can form between conducting parts by electrostatic induction from storms overhead or at a considerable distance. Induced sparks can generally cause fires only by the ignition of gases. Electromagnetic induction could cause sparks as a result of heavy currents caused by a direct stroke in the vicinity of the tank.

Direct Strokes Most Dangerous

"Direct strokes are by far the most dangerous, but voltages by direct strokes are much less likely to occur than by induction. Induced sparks can occur only between isolated conducting parts or conducting parts in poor contact. These conducting parts could be of metal or water, etc. Trouble by electromagnetic induction is probably the least likely to occur.

"Although the chances of direct strokes are usually small, the effects are so severe that an exhaustive study of protection against them seemed worth while. Models were built to scale and subjected to voltage from the lightning generator as well as all other types of voltage. The same general results were obtained from all types of clouds, points, spheres and planes The hits were recorded by placing paper targets under the tank or other object under study. A hole in the paper recorded the spot struck."

After explaining that in one of the experiments a rod was placed in the center of the target, Mr. Peek continues:

"It will be noted that in this latter case either the rod was struck or the ground at least four rod lengths away. There was an area immediately around the rod that was not struck. It can be seen that a model building or tank properly located with reference to the rod inside of the protected area would not be struck. It has been found that this same principle applies to a number of rods. For instance, if four rods are arranged at equidistant points around a circle in such a way that their protected areas overlap, a spark never strikes inside of the circle. Thus, a tank or building placed within the circle would be protected from direct hits. It is desirable to place the rods a rod length away from the tank.

Gas Elimination Simplifies Problem

"From the investigation it seems that a metal tank offers the only complete protection in oil storage against both direct strokes and induced lightning voltages. The thickness of the metal is not important from the standpoint of induction, but from the standpoint of direct strokes must be great enough to prevent melting through. The cover and all other metal parts must be in good electrical contact. This applies especially to parts near together. When explosive or inflammable gases can be eliminated the problem is greatly simplified, since it is reduced to the protection of the tank against direct hits. It appears that this can be done by placing pointed rods around the tank. A round tank can be protected by three rods. No part of the protected area must be a greater distance from some rod than approximately four times the height of the rod To secure a greater factor of safety, it may sometimes be advisable to use a ratio of less than four. It is desirable to locate the rods about a rod's length away from the tank although it is possible that this distance may be as small as half a rod length without trouble. The object of placing the rods in this way is to cause the hits to occur at some distance from the tank and to prevent side flashes.

"The rods should be grounded to damp earth immediately below. Where the ground resistance is high or uncertain it is probably best to connect the rod to the tank ground as well as to its own ground. If guys are used it is desirable to make them as short as practicable and to attach them to the rod as near the ground as practicable. When there are projections aboveground the height of the rods is increased an amount equal to the height of the highest projection.

Ratio of Protection Varies

"It may be concluded from tests that a given area can be protected by arranging a number of rods about it so that no point on the area is at a greater distance from a rod than the protective ratio times the rod height. The protective ratio varies with the cloud-rod ratio or the ratio of the height of the cloud to the height of the rod. The practical protective ratio will usually vary between 3 and 4.

"Direct hits do not always strike the highest point unless it is 2 5 per cent of the cloud height and directly under the cloud. A rod 1.1 per cent of the cloud height is struck 50 per cent of the time.

"A 6-foot rod has 15 times the chance of being struck as a flat area directly under a 1,000-foot cloud.

"A number of rods may be arranged to protect a given area from direct hits. The area to be protected must not be at a greater distance from some rod than the protective ratio times the height of the rod. This protective ratio is approximately four over a wide practical range. It is not actually constant, however, but depends upon the ratio of the cloud height to rod height.

"In arranging any protective scheme it is important to guard so far as possible against side flashes. For this reason rods should be placed from one-half to one rod length away from the tanks. A greater distance would tend to make too many rods or too high rods necessary to cover a given area.

"Rods seem to offer one of the most practical means of protection against direct hits.

"The condition of the ground and method of making ground connections is important."

FURNACE OIL BUSINESS WILL EXPAND RAPIDLY

(Continued from Page 38)

isfaction only in cases where a high-grade burner is installed and operated with a suitable fuel backed with the necessary service by both the burner and oil sellers. An attempt to compromise with either a cheap burner or fuel or both has invariably brought disaster to the companies responsible.

Superior Heating

Several speakers at both the manufacturers' and salesmen's sessions said the emphasis in their industry must be placed on the superiority of their heating system rather than its cheapness. Coal in most cases is still much cheaper for the average householder when only actual fuel and installation costs are considered. Cleanliness, ease of operation, additional room space in the basement and elimination of smoke are among the superior features which the salesmen should stress, according to the speakers.

This particular angle of the oil burner situation was best summarized by Edward James Cattell in the main address at the annual banquet when he said:

"The average American no longer is interested in thrift for thrift's sake alone. Living conditions have advanced to a stage where the working man, whether he does his work in overalls or a white collar, is interested in what the contents of his pay envelop will bring in the way of comfort and even luxury. The luxuries of yesterday are the necessities of today. The oil burner for heating homes is in class with the electric refrigerator, the vacuum cleaner and other labor saving machines. The oil burner manufacturer is in step with the times."

No Cheap Product

This in effect means the oil refiner will have to manufacture the grades suitable for the burners or stay out of the market. The fact that he can cut his distillate costs a cent or so a gallon by making an off specification product apparently will not appeal to the reputable seller of distillates even though the refiner passes on to this buyer his saving in manufacturing costs.

It is entirely possible, according to one of the larger oil burner manufacturers, that as the burners are improved it will be possible to use an oil distillate which costs the refiners less to produce. Such a development obviously will work to the benefit of the manufacturer as well as the refiner. The new industry during the past two or three years has had the services of some of the leading heating engineers and great progress in the design of the burners has resulted.

In the early history of the industry there were over 1,500 companies or individuals making oil burners according to a statement made at one of the manufacturers' meetings. Many plumbing concerns thought that with a couple pieces of pipe and a tank they could furnish their customer with a burner at a small fraction of the price charged by the legitimate manufacturers. These inexpensive burners invariably were unsatisfactory and have done much to retard the growth of the industry.

The number of burner manufacturers has greatly decreased and at the present time the bulk of the output is coming from less than 25 companies. These companies are constantly carrying experimental and research work to better their burners. Formerly much dissatisfaction occurred due to the fact that the oil burners were installed in furnaces formerly using coal or some other fuel. Experience has shown that best results are obtained where the furnace is especially designed for oil heating. Due to this fact some dealers are concentrating their efforts on installations in new homes or places where the owner is willing to remove his old heating system entirely and replace it with the new.

These are just a few of the problems pointed out at the meeting of the manufacturers' session. Service was stressed as well as perfection in burner design. The owner of the oil burner feels that his burner must operate properly at all times without any effort on his part and it is the duty of the dealer selling the burner to see that this service is rendered.

Example of Progress

As an example of the progress made in burner manufacture and service, a Chicago oil company points to a case in which it furnished the oil. The owner of the burner spent several weeks during the winter in Florida. Not wishing to leave his home without a fire while he was away he left his burner operating when he went to the winter resort. The burner was automatically controlled and the oil company saw that the tank was kept filled through a connection outside

the basement. Without anyone entering the house to regulate the furnace the owner returned from his vacation and found the temperature of the house the same as when he left.

Coal Dealers Sell Oil

Indicating the complete change of attitude toward the oil burner industry on the part of outsiders is the fact that many coal dealers are now selling fuel oils. Cases are reported in which the dealers are actively soliciting the distillate business. The fact that they have seen their coal sales dwindle is responsible for this.

Although the matter was not discussed at any of the convention sessions, this entry of the coal dealers in the oil distributing end brings up an interesting problem for the oil industry. Some companies fear that these coal dealers will eventually see fit to sell gasoline, lubricating oils and other petroleum products in job lots. This could easily be done during the slack spring and summer months.

Other companies believe that the coal dealers are the logical concerns rathers than gasoline jobbers to sell the fuels. The average jobber of gasoline and lubricating oils has never been greatly interested in the possibilities of selling fuel distillates. The business differs in many respects from that of merchandising gasoline and lubricating oils. In the smaller towns and cities the volume of business in many cases is not large enough to be profitable to the distributor. The coal dealers who are familiar with the problems peculiar to the sales of fuel, it is claimed, can render better service. The bulk of the distillate at the present time is being distributed by companies owning their own refineries and by independent jobbers.

Other Industries

As the oil burner industry expands it is attracting the attention of other industries and public service organizations. Some of these industries are furnishing the control equipment which has become a vital part of the modern burner. Charles K. Nichols, of the New York Edison Co., explained that the electrical power industry has become interested due to the electricity used in the operation of the burners. This use like that of electric refrigeration is especially attractive to the power companies because it is continuous. The electrical industry is now making a complete investigation of the oil burner situation. The investigation will determine whether that industry will actively support the manufacture and sale of the burners.

Where Sold

The bulk of the burner sales is in a few states. Climatic conditions and the availability of competitive fuels are the two main factors determining burner sales. The West Coast States, with the exception of the southern part of California, have been excellent buyers of the burners. The warm climate and the availability of natural gas work against the sales of the burners in southern California and the same is true of Texas, Arkansas and Oklahoma. Sales are relatively few in these States.

Parts of Montana, Idaho and Colorado are large users of the oil burners. The main business in the Middle West centers in the Chicago area. Cheap coal in some of these middle western states have held back sales and the same is true of a part of Pennsylvania. New York and the New England States are probably the largest users of the burners. Despits the warm climate quite a few installations are being made in the southern states including Florida.

Oil Heating Institute

As explained in the convention report appearing in the April 5 issue of The Oil and Gas Journal, great credit is given the Oil Heating Institute for the stabilization of the industry during the past year. The institute which is an allied organization of the American Oil Burner Association has carried on a national advertising and educational program. Plans were completed at the convention for a continuance of this program on a more elaborate scale during the coming year.

MID-CONTINENT REFINERY RUNS UP 24,080 BBLS.

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REFINERY OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Kent-Middleton Refining Co., Angus	4,000	2,000	1,700
Kent-Middleton Refining Co., Minerva	2,500	(*)	1,000
Macmillan Petroleum Co., Isom	5,000	4,000	4,000
Magnolia Petroleum Co., Fort Worth	12,000	5,600	5,500
Magnolia Petroleum Co., Corsicana	5,000	3,200	3,000
Noble Oil & Gas Co., Burkburnett	3,500	3,000	3,000
Odessa Refining Co., Odessa	500	200	(*)
Olney Oil & Refining Co., Olney	2,000	1,250	1,200
Oriental Refining Co., Dallas	5,000	(*)	(*)
Oriental Refining Co. (Trinity), Dallas†	5,000	2,750	2,600
Orient Petroleum Co., Wichita Falls	2,500	250	1,150
Panhandle Refining Co., Wichita Falls	4,000	4,000	3,750
Phillips Petroleum Co., Isom	6,500	3,500	3,500
Primrose Refining Co., Wichita Falls	1,500	(*)	(*)
Primtex Refining Co., Grand Prairie	2,500	500	500
San Angelo Refining Co., San Angelo	2,000	1,000	1,000
Simms Oil Co., Dallas	5,000	4,000	4,000
Star Refining & Producing Co., Fort Worth	1,800	1,000	500
Swastika Refining Co., Muenster	1,000	(*)	200
Sweetwater Refining Co., Sweetwater	500	300	300
The Texas Company, Dallas	15,000	12,000	12,000
Tidal Western Refining Co., Burkburnett	3,000	2,000	2,000
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,000	2,000
Transcontinental Oil Co., Fort Worth	5,000	3,000	4,000
Waggoner Refining Co., Electra	3,400	2,900	2,200
White Eagle Oil & Refining Co., Fort Worth	6,000	(*)	(*)
‡Wicket Refining Co.	2,500	...	...
Valley Refining Co., Wichita Falls	2,500	(*)	(*)
Valley Refining Co., Peyote	2,500	1,000	2,000
Total	192,000	107,050	109,050

*Shut down. †Operated by Magnolia Petroleum Co. ‡Runs tops only.

REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Crystal Oil Refining Corp., Shreveport	14,000	9,000	9,000
Louisiana Oil Refining Corp., Shreveport, Bossier	23,000	20,000	17,000
Shreveport Producing & Refining Co., Shreveport	6,000	7,000	5,700
The Texas Company, Shreveport†	5,800	6,000	5,970
Total	48,800	42,000	37,670

†Topping.

REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

Name and Location—	Daily Capacity	Runs Apr. 1	Runs Mar. 1
Henry H. Cross Co., Smackover	4,000	4,500	3,600
Houston Oil Co., Camden	3,000	(*)	(*)
Kettle Creek Refining Co., Pearson	3,000	2,000	2,000
Lion Oil & Refining Co., El Dorado	12,000	6,000	4,000
Macmillan Petroleum Products Co., El Dorado	1,800	800	1,200
Ouachita Valley Refining Co., El Dorado	1,000	700	850
Root Refineries, El Dorado	3,500	3,200	3,500
Simms Oil Co., Smackover	3,000	2,500	2,500
E. M. Tulie, El Dorado	1,000	(*)	(*)
Total	32,300	19,700	17,650

*Shut down.

TEXAS PANHANDLE FIELDS

(Continued from Page 40)

feet and plugged back to 3,360 feet and made 4,000,000 feet of gas from pay at 3,075-3,190 feet. Majestic Oil Co.'s No. 4 J. B. Bowers, SW cor. E half Section 92, Block B-2, was drilled to the total depth of 3,225 feet and is producing 405 bbls. from the granite wash at 3,040-60 feet. Ray & Massie's No. 1 A. Chapman, NE NW SW Section 51, Block 25, had an initial production of 4,320 bbls. from the granite wash at 2,790-2,800 feet and is now making 1,965 bbls. daily. The Texas Company's No. 2 H M. Davis, SW cor. NW Section 86, Block 3, swabbed 240 bbls. from pays found at 3,085-3,145 feet and 3,154-63 feet. St. Clair's No. 1 J. K. Creios was junked at 3,175 feet and has been temporarily abandoned.

Hale County

Exploration Co.'s No. 1 Crawford, C NE Section 17, Block C-3, T.T.R R. Survey, was spudded and abandoned.

Hartley County

Deep Rock Oil Co.'s No. 1 Lyman & Balfour was dry and abandoned at 4,038 feet.

Oldham County

Prairie Oil & Gas Co.'s No. 1 Landergin, SE cor. NE SW, Section 46, League 310, Capital Land, was dry and abandoned at 5,645 feet.

Potter County

El Rio Oil Co.'s No. 1 River Bed, Section 106, Block 46, H.&T.C. Survey, and in the Canadian River Bed, made 25,000,000 feet of gas at 1,760-1,897 feet.

Sherman County

Gibson Oil Corp.'s No. 1 Lee Bivins, Section 35, Block 3-B, had 1,700 feet of water in the hole at 3,650-60 feet. The rig burned and the test has been plugged and abandoned.

Wheeler County

Sabine Oil Co.'s No. 1 E. L Woodley, C SE SE Section 21, Block 24, H.&G.N. Survey, made 45,000,000 feet of gas from the granite wash that was topped at 1,905 feet and bottomed at 1,948 feet. H. Vaughan and others' No. 1 C. C. George, C SE NW Section 96, Block 17, H.&G.N. Survey, had the top of the lime at 1,540 feet, top of the granite wash at 2,200 feet and was dry and abandoned at 2,536 feet.

WICHITA FALLS DISTRICT COMPLETIONS

Week ended April 7

Archer County

Panhandle and Grisham's No. 4 Farmer-A made 25 bbls. at 1,533-42 feet. Bridwell Oil Co. and others' No. 1 Wilson found the pay at 1,572-84 feet and made 245 bbls. Fain-McGaha and Humble Oil & Refining Co.'s No. 4 Wilson-C made 48 bbls. oil and 5 bbls. salt water at 1,565-70 feet. Fain-McGaha and United Producers Co.'s No. 5 Wilson-B made 174 bbls. at 1,564-79 feet. Same company's No. 6 Wilson-B made 135 bbls. at 1,553-70 feet. Gohlke and others' No. 2 Taylor made 75 bbls. oil and 30 bbls. water at 1,558-60½ feet. Petroleum Producers Co. and others' No. 1 Wilson-E made 182 bbls. at 1,572½-85 feet.

The following wells are dry and abandoned: Bridwell Oil Co.'s No. 1 Halaske at 1,484 feet. Burns and others' No. 1 York at 1,500 feet. Long and others' No. 1 Wilson at 1,604 feet. Minton's No. 1 Dycus at 1,403 feet. Steed and others' No. 1 Ikard at 1,205 feet. The Texas Company's No. 1 Young at 1,351 feet. United Producers Co.'s No. 1 Lemmond at 825 feet. Dixie Oil Co.'s No. 1 McCrory, trustee, at 1,604 feet. Fain-McGaha and Humble Oil & Refining Co.'s No. 1 Wilson-D at 1,600 feet. Johnson and others' No. 4 Wilson-A at 1,635 feet.

Clay County

Western Oil Corp. and others' No. 2 Wright made 8 bbls. at 843-48 feet.

Denton County

Lesh & McCall and others' No. 1 Fortenberry was dry and abandoned at 3,404 feet.

Montague County

R. I. Carter's No. 4 Bouldin made 30 bbls. at 809-24½ feet. Carter & Rycade Oil Co.'s No. 8 Cunningham made 32 bbls. at 911-25 feet. Conoco's No. 7 Salmon and others found two pays at 848-98 feet and 912-18½ feet, and made 24 bbls. Same company's No. 9 Salmon and others found the pay at 1,366 to 1,403 feet and made 8¾ bbls. The United Producers Co. junked their No. 1 Jackson at 2,980 feet.

Jack County

Lytecker and others' No. 1 First State Bank of Bryson made 40 bbls. from pay at 3,290 to 3,339 feet and was drilled to the total depth of 3,376 feet.

Wichita County

Grayce Oil Co.'s No. 7 Overby made 15 bbls. at 675 to 700 feet. Grayce & Cotton's No. 5 Kemp-Kempner made 115 bbls. at 849-65 feet.

The following wells were dry and abandoned: Thorton Lomar and others' No. 2 McCormick at 1,312 feet. Harry Hines and others' No. 1 River bed at 2,004 feet. The Texas Company's No. 349 Waggoner at 2,252 feet.

Wilbarger County

The Texas Company's No. 3 Waggoner-E made 165,000 feet of gas at 703-16 feet. Waggoner Refining Co.'s No. 4 Waggoner-F pumped 145 bbls. from pay at 2,359-77 feet. Consolidated Oil Co.'s No. 1 Wheeler was dry and abandoned at 2,503 feet. The Texas Company's No. 2 Castleberry-B was dry and abandoned at 2,752 feet.

Young County

Allday & Carter's No. 7 McKinley made 5 bbls. at 514-36 feet. Cunningham's No. 5 Hawkins made 40 bbls. at 507-32 feet. Kleiner and others' No. 2 Hawkins made 10 bbls. at 494 to 512 feet.

The following wells were dry and abandoned: Albright and others' No. 1 Anderson at 550 feet. Anderson & Chancellor's No. 1 Miller at 550 feet. Consolidated & Kimberlin's No. 1 Nail at 646 feet. Cooper & Hamilton's No. 1 Thomas at 1,031 feet. Donahoe and Atlantic's No. 1 Furr at 1,202 feet.

RANGER DISTRICT COMPLETIONS

Week Ending April 7, 1928

Brown County

Cranfill & Reynolds' No. 1 Eubanks is producing 757 bbls. of 44.1-gravity oil from pay 1,210-25 feet. Henshaw Oil Corp.'s No. 5 Bush was drilled to a total depth of 1,114 feet and after a 25-quart shot at 1,105-13 feet made 15 bbls. Same company's No. 6 Bush made 46 bbls. at 1,116-25 feet and is being cleaned out after a 10-quart shot. Jay Hawk Oil Co.'s No. 4 Boysen was drilled to a total depth of 1,223 feet and made 40 bbls. after a 10-quart shot at 1,209-18 feet. Pandem Oil Corp.'s No. 7 Hutton was shot with 3 quarts at 1,109-21 feet and has an estimated production of 5 bbls. Same company's No. 8 Hutton was drilled to a total depth of 1,120 feet and after a 5-quart shot at 1,111-19 feet made 60 bbls. Peckham and others' No 1 Newton was drilled to a total depth of 1,145 feet and produced 12 bbls. in 48 hours at 1,131-42 feet. M. L. Richards' No. 5 Curry made 50 bbls. at 1,108-19 feet.

The following wells were dry and abandoned: Daniels and others' No. 1 Alvis had a hole full of water at 1,532-41 feet and was abandoned at 1,542 feet. Gilman & McMurray's No. 1-A Hickman was junked at 1,274 feet. G. P. Mitcham's No. 1 Hanford at 1,197 feet.

Callahan County

W. J. Armstrong's No. 1 Hickman was dry and abandoned at 755 feet. Farlin Oil Co.'s No. 1 Jackson was dry and abandoned at 1,029 feet.

Coleman County

Pitts and others' No. 1 Burns was dry and abandoned at 1,605 feet. The Texas Company and Dean & Adkisson's No. 1 Sealey-Smith was dry and abandoned at 2,468 feet. Altrock & Haynes have abandoned the location for their No. 1 fee.

Comanche County

Scoggins and others' No. 1 Poteet found the pay at 2,669-79 feet and is estimated as making 1,500,000 feet of gas and 60 bbls. of oil.

McCulloch County

Dover & Kries' No. 1 Kage was dry and abandoned at 1,830 feet.

Shackelford County

Amerada Petroleum Corp.'s No. 1 Alexander was drilled to a total depth of 1,735 feet and plugged back to 1,650 feet and has an initial production of 20 bbls. at

1,639-41 feet. Catlett and others' No. 1 Alexander made 7 bbls. at 897-907 feet. J. S. Cosden, Inc.'s No. 2 Davis found the pay at 1,475-85 feet and made 17 bbls. Dingee and others' No. 1 Matthews was drilled to a total depth of 1,192 and plugged back to 1,104 feet and had an initial production of 10 bbls. from pay at 1,098-1,104 feet. Hope Petroleum Corp.'s No. 10 Davis produced 70 bbls. from pay at 1,490-1,505 feet and has been drilled to a total depth of 1,507 feet. Roeser & Pendleton's No. 2-A-62 Cook was dry and abandoned at 1,574 feet. Same company's No. 6-B-61 Cook made 40 bbls. from pay at 1,353-60 feet and was drilled to a total depth of 1,363 feet. Skelly Oil Co.'s No. 1-34 Matthews found the pay at 1,149-51 feet and made 83 bbls. oil and 16 bbls. water. Tannehill Oil Co.'s No. 2-34 Matthews found the pay at 1,144-53 feet and made 165 bbls. on the pump.

ESTIMATED DAILY AVERAGE PRODUCTION NORTH TEXAS
Week ended April 7

Panhandle—	
Carson County	6,895
Gray County	22,635
Hutchinson County	42,290
Potter County	25
Wheeler County	1,060
Total this week	72,905
Total last week	74,230
Decrease	1,325
Wichita Falls district—	
Archer County	20,936
Baylor County	85
Clay County	481
Cooke County	3,315
Jack County	1,477
Montague County	9,165
Throckmorton County	957
Wichita County	27,108
Wilbarger County	12,795
Young County	8,763
Total this week	85,082
Total last week	84,230
Increase	852
Ranger district—	
Brown County	12,700
Callahan County	3,869
Coleman County	1,566
Comanche County	1,275
Palo Pinto County	468
Ranger	9,208
Shackelford County	8,660
Stephens County	8,420
Total this week	46,166
Total last week	45,525
Increase	641
Grand total this week	204,153
Grand total last week	203,985
Increase	168

ESTIMATED DAILY AVERAGE PRODUCTION WEST TEXAS
Week ended April 7

Crane County	68,380
Crockett County	2,794
Ector County	15
Fisher County	325
Howard County	4,180
Jones County	1,290
Loving County	125
Mitchell County	3,370
Pecos County	48,638
Reagan County	19,255
Runnels County	145
Scurry County	36
Upton County	13,985
Winkler County	209,270
Total this week	371,808
Total last week	355,613
Increase	16,195

WEST TEXAS
DAILY AVERAGE PRODUCTION BY LEASES
Week ended April 7

CRANE COUNTY

Company and lease—	Wells	Bbls.
Church et al:		
University	1	49
Church & Weekley:		
University	3	1,040
Church & Fields:		
Duoil-University	1	67
Eastland Oil and Collett:		
University	8	3,363
Gulf Production Co.:		
All leases	67	17,764
Humble O. & R. Co.:		
University	13	4,387
Independent O. & G. Co.:		
University-A	5	*953
University-B	2	*510
Landreth Prod. Corp.:		
Cowden-Anderson	16	8,693
Magnolia Pet. Co.:		
Univ.-Hardwicke	14	2,445
Univ.-O'Keefe	12	1,456
State-Lasseter	3	120
Magnolia et al:		
University	1	47
Pecos Oil Co.:		
University	16	3,188
Prairie O. & G. Co.:		
University	5	*416
State-Lasseter	7	*9,024
Simms and Atlantic:		
University-A	9	*1,690
University-B	1	49
University-C	8	*3,687
University-D	12	*4,000
University-E	1	154
Stidham & Thrasher:		
University	1	7
The Texas Company:		
University	1	200
Univ.-Beasley	1	20
Tidal Oil Co. et al:		
University-B	2	52
University-C	1	36
University-E	1	61
University-F	8	*1,224
University-G	2	*12
University-H	2	4
University-I	8	*2,835
Total Church and Fields Pool	236	67,557
Average per well		286.2

Miscellaneous Crane County

Gulf Prod. Co.:		
Waddell	1	28
McMan O. & G. Co.:		
Hughes	2	60
Marland Oil Co.:		
All leases	14	549
The Texas Company:		
King	9	186
Miscellaneous total	28	823
Grand total Crane County	264	68,380
Average per well		221.1

PECOS COUNTY

Pandem Oil Co. et al:		
Pecos River bed	7	0
California Oil Co.:		
Yates, Lease 1	13	2,560
Smith, Lease 1	1	119
Smith, Lease 3	11	4,609
Gulf Production Co.:		
All leases	11	6,251
Humble O. & G. Co.:		
M. A. Smith	6	1,711
M. A. Smith-B	4	1,452
Kirby Pet. Co.:		
J. H. Tippett	1	27
Kirby Pet. Co. and Edson:		
J. H. Tippett	1	223
Marland Oil Co.:		
Yates-A	10	968
Masda and Savoy Oil Co.:		
M. A. Smith	1	288
McMan and Marland:		
Yates	15	2,843
McMan O. & G. Co.:		
J. E. Tippett	2	511
Mid-Kansas and Trans.:		
Yates-A	15	3,733
Yates-B	24	5,891
Yates-C	9	2,146
Yates-D	2	806
Yates-E	1	131
Yates-F	1	48
Smith	2	75
Smith-Taylor	11	6,583
Phillips Pet. Co.:		
Smith	1	134
Red Bank Oil Co.:		
Smith	2	480
Roxana Pet. Corp.:		
Tippett	7	2,830
Smith	5	1,188
Skelly Oil Co.:		
Tippett	1	127
Simms Oil Co.:		
Smith	6	2,901
Texon O. & L. Co.:		
Yates	2	0
Total Yates Field	170	48,638
Average per well		286.1

WINKLER COUNTY

Atlantic O. P. Co.:		
Grisham-Hunter	6	4,575
Grisham-Hunter-E	1	1,410
Ida Hendricks	1	331
Ida Hendricks-D	3	*5,210
Atlantic and Collett:		
Ida Hendricks-F	1	12,350
Cranfill & Reynolds:		
Ida Hendricks	2	2,169
Grisham-Hunter-B	1	160
Hendricks-C	1	*14,919
Gulf Prod. Co.:		
T. G. Hendricks	8	*13,612
Humble O. & R. Co.:		
Grisham-Hunter	7	*19,022
Ida Hendricks-B	5	4,348
Independent O. & G. Co.:		
E. W. Cowden	1	32
Grisham-Hunter	7	*3,605
Grisham-Hunter-B	3	*1,467
Hendricks	1	27
Ida Hendricks-B	1	248
Landreth Prod. Corp.:		
Grisham-Hunter	2	5,976
Ida Hendricks-A	4	6,127
Magnolia Pet. Co.:		
Ida Hendricks	6	3,311
Murchison and Cranfill Brothers:		
Grisham-Hunter	2	131
Grisham-Hunter-C	1	94
Grisham-Hunter-B	2	727
Republic Prod. Co.:		
Grisham-Hunter-A	2	*13,350
Grisham-Hunter-B	1	0
Roxana and Llano:		
Scarborough	1	Shut in
Roxana Pet. Corp.:		
Grisham-Hunter-A	2	*15,731
Grisham-Hunter-D	4	*5,426
Ida Hendricks-B	3	*6,311
Ida Hendricks-C	7	*15,260
Southern Crude Co.:		
T-67 Hendricks-A	1	197
T-67 Hendricks-C	5	1,193
T-67 Hendricks-B	1	524
T-67 Hendricks-3-B	1	*9,250
T-67 Hendricks-F	3	3,237
T-68 Ida Hendricks-A	1	0
T-88 Ida Hendricks-A	2	875
T-88 Hendricks-B	2	6,049
T-88 Ida Hendricks-C	6	2,139
T-88 Ida Hendricks-H	1	2,100
T-88 Ida Hendricks-I	1	1,281
Texon O. & L. Co.:		
Grisham-Hunter-A	2	*4,415
Grisham-Hunter-B	2	5,739
Pure Oil Co.:		
Grisham-Hunter	5	8,150
Grisham-Hunter-B	3	2,613
Turman et al:		
Ida Hendricks	6	5,569
Total Winkler County	128	209,270
Average per well		1,634.9

*Pinched in.

OIL REPORT IN BRAZIL

Dispatches from Rio de Janeiro state that oil has been discovered on the right bank of the Tapajoz River, bordering Henry Ford's rubber concession.

WEST TEXAS FIELDS

(Continued from Page 39)

bbls., 4 per cent water and b.s. Same company's No. 10 Grisham-Hunter topped the pay at 2,811 feet and bottomed at 2,869 feet and made 100 bbls per hour, 21 per cent water and b.s. Same company's No. 5 Ida Hendricks-B, NW NE SE Section 29, Block B-5, topped the pay at 2,885 feet and bottomed at 2,924 feet making 50 bbls. per hour. Landreth & Roxana Oil Corp.'s No. 2 Ida Hendricks-A, Section 29, Block B-5, topped the pay at 2,980 feet and bottomed at 3,065 feet and made 4,150 bbls., 66 per cent water and b.s. Roxana Petroleum Corp.'s No. 3 Grisham-Hunter-D, Section 41, Block B-5, topped the pay at 2,811 feet and bottomed at 2,950 feet and had an initial production of 960 bbls. open. The flow is increasing daily. Same company's No. 4 Grisham-Hunter-D, NE cor S half NE Section 41, Block B-5, topped the pay at 2,656 feet and bottomed at 2,765 feet and made 289 bbls. initially.

Southern Crude Oil Purchasing Co.'s No. 2 Ida Hendricks T-88-A, Section 44, Block 26, topped the pay at 2,965 feet and bottomed at 3,100 feet. The well was shot with 280 quarts at 2,988 to 3,100 feet and made 50 bbls. per hour. Same company's No. 2 Ida Hendricks T-88-H, Section 28, Block B-5, was completed in pay from 2,961-98 feet and is estimated to be flowing 1,100 bbls. daily. No. 1 and No. 2 on that lease are flowing into the same tank and made 3,158 bbls. open. Turman & Maxwell's No. 8 Ida Hendricks, Section 29, Block B-5, drilled into the pay at 2,860 feet and bottomed at 2,967 feet The well produced 700 bbls., 2 per cent b.s. and water.

Humble Oil & Refining Co.'s No. 7 Ida Hendricks-B, SE NW N half SE Section 29, Block B-5, has been temporarily abandoned at 210 feet.

OKLAHOMA REFINED MARKET STRONGER

(Continued from Page 28)

may be seen as the summer season approaches and natural gasoline prices are advanced.

The weighted average prices for the several more important grades of gasoline sold on April 9 and a week ago as reported by refiners in Oklahoma follows:

	Price April 9	Price April 2
58-60 U. S. Motor...	.06633	.06570
60-62 U. S. Motor...	.06750	.06610
60-62 400 endpoint..	.07172	.06880
64-66 375 endpoint..	.07250	.07250

Naphtha prices were advanced in proportion to gasoline prices and while the volume moved is small, blenders have increased their purchases in view of the more profitable margin in blending natural gasoline and naphtha.

Natural Gasolines

Several of the larger manufacturers in the Mid-Continent entered the natural gasoline market during the past week and made substantial purchases to apply on shipments to local refiners and higher prices were established immediately. With the coming of warmer weather production has fallen off at the individual plants and as the freely offered material was absorbed, manufacturers quoted higher prices on future deliveries.

Some manufacturers were hesitant about quoting any price for delivery over the balance of the month except those materially higher than the present market. The higher prices have been expected because there has been too great a difference between the price of refinery gasolines and natural gasoline. Over the next two weeks, manufacturers expect export inquiries to come in and in that case the prices might be advanced rapidly. It is difficult to anticipate just what course the immediate future of natural gasoline prices will take but they are expected to gain strength rather than react and there is a strong likelihood of prices advancing rapidly over the next two weeks.

Kerosene and Distillates

The large demand for kerosene has allowed refiners to advance their prices and there are a few who are expected to increase their price to 5 cents within a few days. The increased demand comes from the agricultural area principally. Distillates moved only in scattered lots and prices were generally unchanged.

Gas Oils and Fuel Oils

Most refiners increased their gas oil price to 2⅝ cents during the week and this is taken as a reflection of the better gasoline market. Refiners have not found it necessary to enter the spot market for gas oil to charge to their pressure stills because many of them have increased their own production through increased crude runs and others have been using from stocks which have been held for many months.

As gasoline prices continue to strengthen gas oil may be expected to advance in proportion and a 2¾-cent price is anticipated for the near future. The low gravity fuel oil was scarce in large quantities and while the market has acted contrary to expectations it is being given a great deal of support.

Just what will come about in the fuel market as a result of several plants being built in the West Texas area where crude is relatively cheap, remains to be seen. It is probable the railroads will not be able to use all the fuel that will be offered them in that field and as a result it will be offered in competition with Oklahoma and Kansas fuel in the western parts of these States and in the Chicago territory. West Texas fuel oil has the disadvantage of taking a higher freight rate and in general has a higher sulphur content than the Oklahoma fuels but these factors are not strong enough to prohibit its competition. As long as West Texas crude prices are relatively low priced it stands as a strong factor in the fuel market. Freight rates out of West Texas have not been given as much attention as rates from other refining centers in the Mid-Continent and revisions may be expected but at present Oklahoma fuel has the advantage of 25 cents per barrel in freight rate to the Chicago area. In order for West Texas fuel to compete with Oklahoma fuel at present it would have to sell at 55 to 60 cents per barrel at the refinery.

Lubricants and Wax

There was a more consistent movement of motor oils than during the last two weeks, but there was no thought of increasing prices. Until the present relatively high stocks are being drawn upon, or crude is advanced prices are not expected to materially advance.

Wax witnessed a recession of activity during last week but this is taken as a reflection of the large amount of buying done during the two previous weeks. Prices remained unchanged.

SINCLAIR-PRAIRIE RUMOR IS DENIED BY OFFICIALS

NEW YORK, Apr. 9.—The presence in New York of officials of the Prairie Oil & Gas Co. and the Sinclair Oil & Gas Co. gave rise to renewed rumors of an impending merger of these companies, which were again denied by the officials of both.

E. W. Sinclair, president of the Sinclair Consolidated Oil Corp., when interviewed said such a merger would work out very well in many respects, but is not under negotiation At the same time he denied a report published here suggesting a triple merger involving Marland Oil Co., Phillips Petroleum Co. and Sinclair Oil & Gas Co. He said the Sinclair company is not planning a sale or merger with any company at present.

W. R. SPANN DIES

SHREVEPORT, La., Apr. 7.—W. R. Spann, 53 years old, associated for several years with E. R. Ratcliff in the natural gasoline business here and builder of the first natural gasoline plant in this territory, died April 4 after an attack of acute indigestion. He was a native of East Carroll Parish and came to Shreveport in 1915. In 1918 he moved to Fort Worth but returned five years ago and resumed his activities in the natural gasoline business and recently sold a large part of his interests.

Developments in Southern California

Geological Features Outlined With Especial Reference to Present Importance of Activity in the Long Beach Field

By Joseph Jensen and Glenn D. Robertson*
San Francisco and Los Angeles.

The developments in the Los Angeles Basin during the past four and a half years have been of great importance to the oil industry of California and also the entire United States. New discoveries have been made with such frequency and regularity that it is fair to assume that future developments will result in further discoveries. It must, nevertheless, be admitted that the expectancy of new fields of major importance is much less certain than it has been at any time in the past five years. However, additional oil may be expected from deeper sands known to exist in several fields in the basin. It is also fair to assume that deeper and uncharted oil zones will be found in others that have not yet been tested.

Prior to 1923 the district in the vicinity of Los Angeles, extending to the ocean, was referred to as the Los Angeles coastal plain. By 1923 it was generally recognized that this district had better be referred to as the Los Angeles Basin. The mountains hemming it in on the northeast side and the northwest and southeast ends are so prominent that no question as to them could be raised. The southwest rim of the basin was represented only by the Palos Verdes Hills and the possibility that certain islands in the ocean might represent the remnant of that rim.

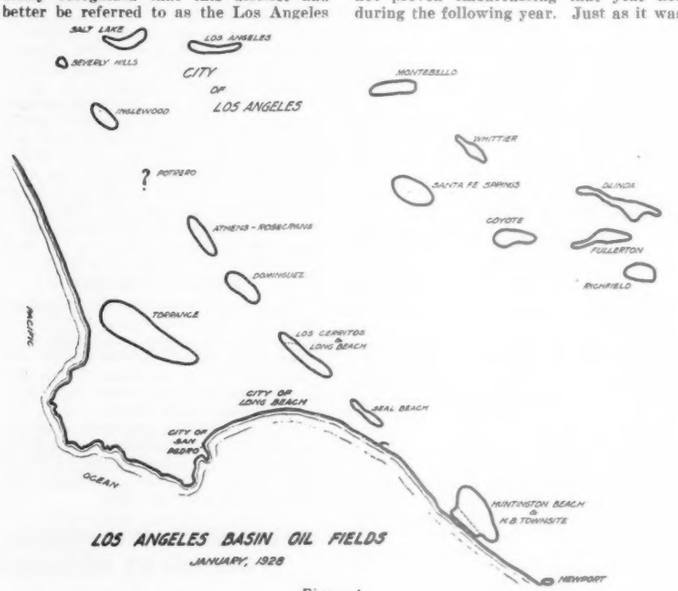

Figure 1.

By 1923 all of the oil fields on the northeast side of the basin had been found and were in the process of development. The principal developments since 1923 have been confined to the fields on the southwest side of the basin. These are located in a straight line of hills, extending from Palms to Newport. This general uplift is sometimes referred to as the Palms-to-Newport uplift.

Map No. 1 shows the Los Angeles Basin oil fields as of January, 1928.

Palms-Newport Uplift

As pointed out above, all of the new discoveries since 1923 in the Los Angeles Basin have been confined to the Palms-to-Newport uplift.

Every oil field found since 1923 has been found only after several dry holes were drilled and sufficient data accumulated to indicate the proper point for the discovery well. This feature stands out so prominently in the history of every field that it should serve as a most important element of encouragement to the geologist who feels that he is fundamentally right in his interpretation. He may well adhere to his views even in the face of apparently discouraging results of the first wells drilled.

In the development of each oil field in the past five years some new feature has been brought out in a particularly prominent way.

The Torrance oil field lies in front of the Palos Verdes Hills, in an area fairly well covered with sand dunes, devoid of any prominent suggestive topography. This field had been found in 1922, but its development as a producer of heavy oil at a depth of 3,000 feet had not proven embarrassing that year nor during the following year. Just as it was well recognized that the peak of production had been passed in 1923, a new discovery opened up an extremely large area for further drilling. The new town lot campaign developed rapidly. With the performance of Santa Fe Springs and Long Beach well in mind, there was room for fear that this situation might go beyond control. Due to the fact that the oil producing zone proved to be only a few hundred feet thick, no great overproduction developed. Deep tests demonstrated that the production came from the Pliocene formation, and that the Miocene formation lying immediately below it did not contain commercial production.

In the year 1924 the same sort of deep test in the Beverly Hills oil field demonstrated that the Miocene immediately below the Pliocene did not contain oil in paying quantities.

Dominguez Field

The next oil field to come into prominence was the Dominguez Field. The topography of this field shows the fact that the oil-producing area is located exactly where geologists thought it should be, despite the doubt created as to the soundness of this view by early drilling.

The Highland Petroleum Co. well was drilled to a depth of 3,661 feet. It found some oil and gas but lack of money prevented deeper drilling. The Standard Oil Co. drilled its No. 2 Dominguez to a depth of 5,005 feet. This test was accepted in 1917 by some as proving that there was no oil in these hills. As a result, the General Petroleum abandoned its No 1 Carson at a depth of 1,622 feet. The area lay inactive until 1923 when the Union Oil Co. drilled its discovery well, No. 1 Callender, just a few hundred feet to the northeast of the General Petroleum-Carson well.

The Dominguez Field is of particular interest in that all wells drilled in it were spaced 610 feet apart, or one well to 8.54 acres. Map No. 2 shows the subsurface structure and the wide regular spacing of the wells. Development of the oil zone was limited to 400 feet of formation below the water shutoff, where that much penetration was possible. On the top of the structure the same 400 feet of zone has not been developed that is developed on the plunge. There is probably as much as 500 to 600 feet of zone which has been subject to this uniform development campaign.

Additional deeper oil was found in 1927 in the northwest end of the field. This deeper zone may not be quite as extensive as the upper zone, but it promises to furnish a large volume of light gravity oil when conditions in the industry justify its development.

The gas lift has probably been used more successfully in this field than in any other in California. Today there are nearly as many wells producing by means of the gas lift as there are flowing and pumping wells combined, and the total production from the wells on the gas lift is greater than the combined production of the pumping and flowing wells. This data is as follows: Twenty-two wells pumping 2,269 bbls., average per well 103 bbls.; 17 wells flowing 4,515 bbls., average per well 265 bbls.; 33 wells on compressor, 6,859 bbls., average per well 207 bbls.

Despite the fact that these wells were drilled so far apart, so that one might feel that well interference would not be very great and that the time of drilling would not be an important element, the following comparison shows the effect of time of completion: Well completed December 10, 1924, initial production 3,100 bbls.; well completed March 5, 1925, initial production 800 bbls.

Both of these wells were located on the most favorable part of the structure. Average initial production of all wells completed, by years, was as follows (in barrels):

1924	2,749
1925	1,271
1926	460

The indicated average ultimate production per well for the wells completed by years, will probably be as follows (in barrels):

1924	771,977
1925	398,843
1926	290,462

Outer Wells Better

One other interesting feature emphasized by developments in this field and related to the spacing of the wells is the fact that for wells penetrating 400 feet of oil zone, the interior wells distinctly do not show the same recovery, even when completed at the same time or at an earlier date and with the advantage of structural position, that the wells show which are on the outer rim of the developed area and were thus permitted to benefit by unrestricted drainage without the interference of other wells beyond them. In order to make a comparison, the total estimated ultimate production of the wells and their dates of completion are given:

Inner Wells		Outer Wells		
Date Completed	Total Ultimate Production	Date Completed	Total Ultimate Production	Outer Wells' Advantage
6-22-24	658,430	7-13-24	1,395,570	737,140
12-23-24	361,926	12- 9-24	907,310	545,384
12-23-24	773,028	12-10-24	1,190,072	417,044
12-18-24	856,823	11-24-24	1,066,835	210,012
11-29-24	453,983	12- 5-24	552,188	98,205

Twelve outer rim wells were completed prior to the end of 1924; seven of these

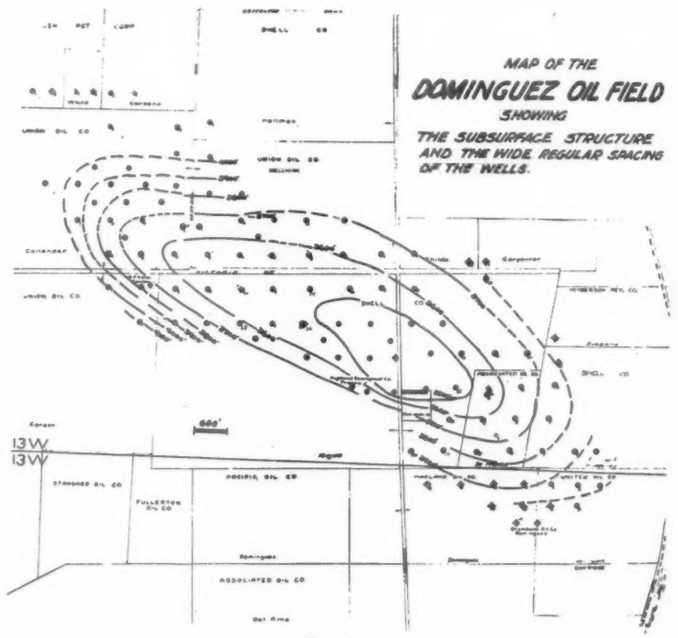

Figure 2.

*Paper read before the American Association of Petroleum Geologists at the San Francisco meeting, March 23, 1928. Printed in The Oil and Gas Journal by permission of the Bulletin of the A.A.P.G. Given with the permission of J. A. Taff, chief geologist, Associated Oil Co., San Francisco, Calif.

will have an ultimate production of more than 1,000,000 bbls. per well. Eleven inner wells were completed prior to the end of 1924, but probably not a single one of these will have an ultimate production of 1,000,000 bbls.

The oil produced in the Dominguez Field is of much the same character as that produced in the Signal Hill and Huntington Beach Fields.

In the Rosecrans field, the Eddystone No. 1 and No. 2 wells were the original tests in this district that failed. These wells were drilled in 1919 and 1920 and found oil and gas. Had the operators known what has since been proven and established by the core barrel they probably would have secured commercial production in the No 1 test well. At Rosecrans the oil is of such light gravity that only the experienced petroleum engineer who has handled many cores in the field is able to appreciate the significance and importance of an ether test on core barrel samples. The oil varies in gravity from 36 to 42 degrees. The sands, even when oil bearing, are gray in color. Their smell when freshly taken from the core barrel is quite as important in determining their oil-bearing character as is the cut secured, but none of these facts was known by the original drillers of the Eddystone wells.

In 1922 the Potter Oil Co. drilled a well in the Athens area to a depth of 4,520 feet, without finding oil. Operations were suspended but the leases were not quitelaimed. Following the success in the Dominguez Field in the fall of 1923, the Union Oil Co. felt that a new test near the Eddystone wells was warranted. As a result it drilled the discovery well in the Rosecrans area in 1924 and took over the Potter well and deepened it so that the Potter well also became the discovery well of the Athens area.

Rosecrans Field

The oil in the Rosecrans Field is found at as shallow a depth as 3,600 feet, but the main commercial production lies at depths of 4,000 feet and 4,900 feet, in the various small domes that make up this field. In some parts of the field the oil zone is as much as 500 to 700 feet thick.

Wells widely spaced in this field have produced in excess of 500 bbls. per day for a year. During the time that the oil in this field was selling for in excess of $2 per barrel, such wells were undoubtedly the best revenue producers in the State.

The Rosecrans Field is also of interest because in this field E. J. Miley drilled the deepest producing oil well in the world in 1925, completing it at a depth of 7,591 feet. The fact that one other well has since been drilled to 8,046 feet does not lessen the credit due Miley. Because his was the first pioneer effort with rotary tools. Cable tools well in the East had reached nearly as deep as the Miley well.

The Rosecrans Field is also of interest in that the deepest oil-bearing formation in the Los Angeles Basin is found here, lying at depths in excess of 7,000 feet. This is even below the deepest oil formation found thus far by the recent development in the Long Beach Field. The oil formation is not nearly so productive, however. The Rosecrans Fie'd was the scene of intense townlot activity in the Athens area and most of the wells drilled there failed to pay. At the present time an oil sand at 5,600 feet is being developed in a minor way.

Baldwin Hills

By far the most prominent topographic feature in the Palms-to-Newport uplift is the Ba'dwin Hills. For this reason they invited prospecting in 1917 by the Bartola Oil Co. and in 1918 and 1919 by the Standard Oil Co. None of these wells found oil, although they were deep tests and were located on or near the top of the surface dome. The presence of a gas seepage in the northwest end of the hills caused the 57 Petroleum Corp. to drill a test there. In 1923 the Pacific Oil Co. drilled a test well north of the hills, upon the theory that part of the structure had been eroded. None of these failures was sufficient to dispose of the conviction held by many geologists and oil operators that these hills contained an oilfie'd. Thus it was that the successful test well was begun by the Standard Oil Co. in March of 1926. In less than two weeks, the well had found oil sand at a shallow depth. It was subsequently completed as a commercial producer.

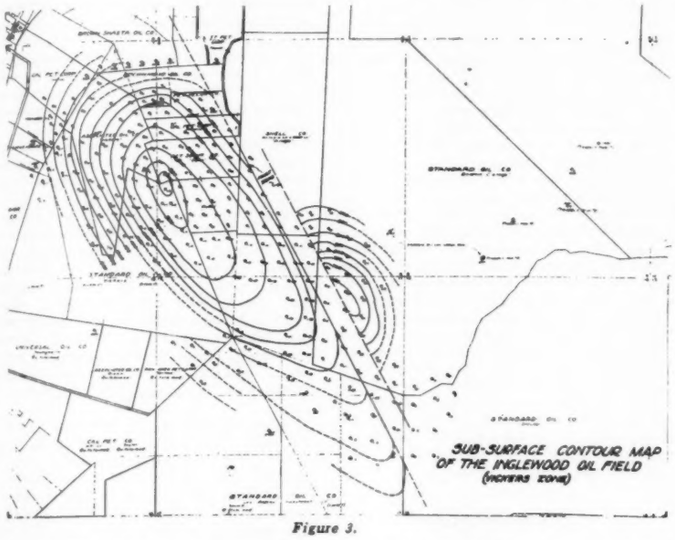

Figure 3.

The key to past failures lay in a fault zone which crosses the hills. Proof of its existence was established by surface work and also by drilling. In the light of subsequent developments it is rather surprising that these features were not so thoroughly appreciated before the fie'd was developed as they were afterward.

Map 3 shows the underground structure which was developed by drilling and also the fault zone. This drilling shows that the fault was subsequent to the formation of the anticline and the accumulation of the oil. The northeast side of the fault was lifted up with respect to the southwest side so that the high topography was actually the flank of the underground structure. The lower topography concealed the crest of the structure.

Map 4 is an ideal east-west cross section through the field, showing the relation of the Pleistocene to the Pliocene and the upper and lower oil zones and the relations of the fault to the structure. This cross section also brings out the fact that while the upper oil zones have been thoroughly exploited, there lies beneath this field an additional oil zone which is 400 to 500 feet thick.

The upper zones have produced oil varying in gravity from 15 degrees to 23 degrees, but the lower zone will furnish oil varying in gravity from 22 degrees to 28 deegrees. One well has been flowing from this zone since 1925. Another well was drilled into the zone but has been shut in ever since 1926.

It is also of interest to point out that the beds down the dip that were elevated by the fault contained oil of lighter gravity on the northeast side of the fault than do the beds in the fault zone and immediately to the southwest of it. A difference of from 2 degrees to 4 degerees gravity has been noted.

Huntington Beach

The main field at Hunting Beach had been proven in 1923. The structure of this field proved to be monoclinal in character. Production in the northwest end was still good, but at the southeast end of the main field the oil sand seemed to merge into gray sands for no particularly good reason. The additional interesting feature was the production of oil secured in what was called the Barley Flat, to the southwest of the main field. Development in the Barley Flat was not pushed intensively by the Standard Oil Co., but in November of 1925 a 500-bbl. well was secured near the ocean. All of this land on the Barley Flat was under lease to the Standard Oil Co. The Huntington Beach townsite area lay to the southeast in a line parallel to the trend of the main field. Dril'ing restrictions in the city prevented activity. These were finally lifted in the spring of 1926. By December of 1926 the townlot field had been fairly well dril'ed and a peak production of 61,000 bbls. had been established.

Drilling disclosed the fact that faulting played a part in the existence of this field. Attention is called to the townsite fault in the townsite area. Emphasis is also placed upon the fault which runs in front of the main field. This fault probably accounts for the monocline in the main field. The relationship of the district between the main field and the townsite area has not been fully worked out. Even the position and the relationship of the townsite fault are not fu'ly accepted by all engineers.

Aside from the importance of faulting, the most interesting feature of the developments in the townsite area is the fact that much oil is secured in the Miocene formation. The production of the main field is from the Pliocene. Consequently, the district to the northeast of the main fault must have been lowered, while the district in the vicinity of the townsite was raised.

At one time one group of geologists held that the topographic feature at Alamitos Heights and the Hellman Hill at Seal Beach represented a single topographic uplift that had been cut apart by the San Gabriel River. They, therefore, felt that if an oil field existed in the district it would probably lie further west than the test wells that had been drilled close to the county line between Orange and Los Angeles Counties. Developments since have proven that there is a main field at Seal Beach and also one at Alamitos Heights. Unquestionably, the presence of two structures here instead of one is one of the most interesting developments in the fie'd. The fact that a fault parallels the strike of the fields is of somewhat minor interest. While the northeast side of the fault in the Inglewood Field was lifted up, the northeast side of the fault in the Seal Beach Field is the down-thrown side.

On the crest of the structure in the main part of the Seal Beach Field, the main oil zone is probably 640 feet thick. There may be an intermediate edge water that will separate this zone from another one of considerable but as yet unknown thickness. Portions of this upper 640 feet of zone have been given several names. More recently beneath all of this oil zone a deeper sand in the Miocene formation has been found by the Marland Oil Co. at Alamitos Heights. The presence of Miocene beds has been proven in the main field, but the test well which found them did not penetrate far enough to dispose of the question as to whether or not the Miocene oil of Alamitos Heights will be found in the main field. It is reasonable to expect that it will.

Long Beach B'g Factor

The most important factor in the present oil situation in California is the Long Beach Field. The importance of this field was not fully appreciated in 1923. This is shown by the fact that it failed to decline materially in production, even in 1924, and that a great deal of drilling in the northwest end of the field was done throughout 1924. This activity continued into 1925. By the end of that year it almost appeared as though a companion structure had been found to the northwest of Long Beach. This relationship was not established by development. The new area known as Los Cerritos proved only to be an extension of the main field.

The drilling campaign at Los Cerritos was well under way at the beginning of 1926. The oil-bearing formation proved to be only about 100 feet thick at a depth of 4,500 feet and 70 feet thick at a depth of 4,800 feet. The securing of 2,500-bbl. wells in the beginning of this development led to townlot drilling which proved most disastrous. About 160 producing wells were secured, but more than one-third of these have been abandoned, while the average production of the 100 that remain is now only 34 bbls. per day.

The new production which is coming from the Long Beach Field is coming from the main field in a zone which has been known ever since 1923 and 1924. Map No. 5 is an ideal north-south cross section through the Long Beach Field, showing the relation of the newly developed deep zone to the earlier productive zones The Alamitos zone was proven to be 950 feet thick. Along the crest of the structure the Brown zone, 1,800 feet thick, was found without any intervening water, giving a total of 2,750 feet of oil-bearing formation. Off the crest of the structure several edge water interfered with penetration of these great thicknesses of oil zone, but many productive wells were secured. The heavy broken line on Map No. 15 shows the depth to which a few wells were drilled on the crest of the structure. The presence of edge water at the base of the Brown zone stopped the drilling of many wells below this edge water, which was often considered bottom water.

Beginning in the latter part of 1926 and extending through 1927 wells were drilled progressively deeper into the deep zone beneath this intermediate or edge water at the base of the Brown zone in the northwest end and also the southeast

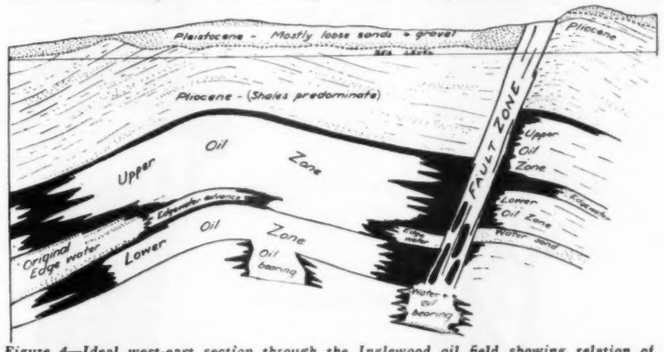

Figure 4—Ideal west-east section through the Inglewood oil field showing relation of Pleistocene to Pliocene sediments and upper and lower oil zones with edgewater sands; also relation of fault to structure.

end of the field. These wells resulted in securing several 3,000 and 4,000-bbl. wells. By October of 1927 the importance of this deeper oil zone was fully appreciated by all operators in the field. Since that time an intensive drilling campaign has been under way. There are now 44 deep zone wells producing 54,636 bbls., representing an average of 1,240 bbls. per well. The total operations in the field number 238 and there are in addition 44 idle wells, represented by rigs, dry holes and water wells. Of the 238 operations, only 29 are operations varying from rigs to wells rigging up

New Production

The rate of increase of this new production has not been fully appreciated because of the fact that it is lumped with the production of the Long Beach Field. The total production of the field has declined, due to wells being deepened and due to the natural decline of production. On November 3, 1927, there were only 8 deep zone wells, producing 15,234 bbls. By January 5, 1928, there were 24 deep zone wells, producing 39,103 bbls. It thus appears that in the last two and a half months only 20 deep zone wells have been completed and only 15,500 bbls. of new production has been secured. Despite this slow rate of increase it is interesting to point out that the new wells drilling may be classified as follows:

Drilling above 4,000 feet	55
Drilling 4,000 to 5,000 feet	37
Drilling 5,000 to 6,000 feet	37
Drilling over 6,000 feet	10
Below the water shutoff	17
Preparing to complete	4

Old wells that are being deepened are classified as follows:

Deepening above 5,000 feet	7
Deepening 5,000 to 6,000 feet	29
Deepening over 6,000 feet	6

Within the past 10 days one well has been completed at the rate of 3,700 bbls. per day. This is due to the fact that it penetrated into the oil zone about 150 feet deeper than neighboring wells.

The new zone of deep development has now been proven nearly 1,200 feet thick, and its maximum thickness has not yet been established on the crest of the structure.

More than half of the operations in the field are under the control of financially strong operators. Generally speaking, the wells now drilling will be drilled to completion and not abandoned. Nevertheless, it is interesting to note that 11 new wells and 12 deepened wells are already idle for mechanical or water conditions. This is more than half the number of producing wells. These facts indicate that while the peak production of the Long Beach Field has been somewhat delayed and that it will probably be delayed until May, there will nevertheless be produced during 1928 an immense volume of oil from this new deep zone. The Long Beach Field proper covers 800 acres. The zone varies in thickness from 400 to 1,200 feet. Obviously, these two factors promise a sustained volume of oil that will contrast very markedly with the flash peaks at Alamitos Heights in 1927, when as much as 55,000 bbls. per day was produced from 60 acres of land.

From a geological standpoint the most interesting feature of this deep zone development is the fact that the new oil comes principally from the Miocene formation. Since 1923, the Miocene has been proven as a source of oil in the Richfield, Huntington Beach Townsite, Seal Beach and Long Beach Fields. It has been proven as nonoil-producing in the Torrance and Beverly Hills oil fields.

Oil in Miocene

Deep tests in the Santa Fe Springs Field, carried to 6,099 and 7,103 feet, failed to find deeper oil. Likewise, in the Fullerton Field deep tests to 5,500 feet that probably reached the Miocene found no deeper oil. This finding of oil in the Miocene does make possible the expectation that some of the other fields will also furnish Miocene oil. On the other hand, it must also be borne in mind that the identification of the Miocene rocks has occurred since 1923 and that if material were available from some of the older fields it might prove that these fields also are producing from the Miocene. This apparently is true in the old Salt Lake Field.

Two interesting geological developments have been brought out in the development of these fields during the past five years: One is the bearing of faulting on the topography and the other is the occurrence of oil in the Miocene.

The Palms-to-Newport uplift has been proven the seat of oil fields and that with the exception of the Potrero district, every uplift has now been proven to represent an oil field. Two faults are associated with this uplift. The upthrown side of the one of the northeast side of the Inglewood Field is the northeast block. The downthrown side of the one in the vicinity of the Seal Beach Field is also the northeast block.

The fact that faulting had an important bearing on developments in the Inglewood Field has already been emphasized. That it might have a bearing on the next uplift to the southeast was sensed about two years ago. This led to renewed prospecting in the Potrero district.

One may well ask what the future of the Los Angeles Basin will be. The abandoned wildcats in the Los Angeles Basin are so numerous that it is hard to find an area which has not been prospected. Experience in the development of the Torrance Field indicates, however, that the sand dune area to the northwest of it and south of the Inglewood Field may possibly furnish an oil field. Some oil has been found and drilling activity has not ceased.

Miocene formation beneath some of the older fields may result in new discoveries. In addition to this fact the presence of commercial oil zones has been established in the Inglewood, Rosecrans and Dominguez Fields. Fortunately, no intense activity is planned for these fields during the year 1928. The activity in Long Beach promises to be sufficient to furnish more than enough oil for California's present needs.

Perhaps the most important lesson that the geologist may take from the developments that have occurred in Los Angeles Basin fields is the assurance that the fundamentals of geology may well be respected, even though the physical and mechanical developments based upon these ideas may temporarily fail. In the application of a science to an immensely valuable district, which application after all depends so much upon personal conviction and courage and faith in one's limited understanding of the facts available, it is highly gratifying to note the soundness of the geological work done and the value of the results achieved by it in the development of the Los Angeles Basin oil fields.

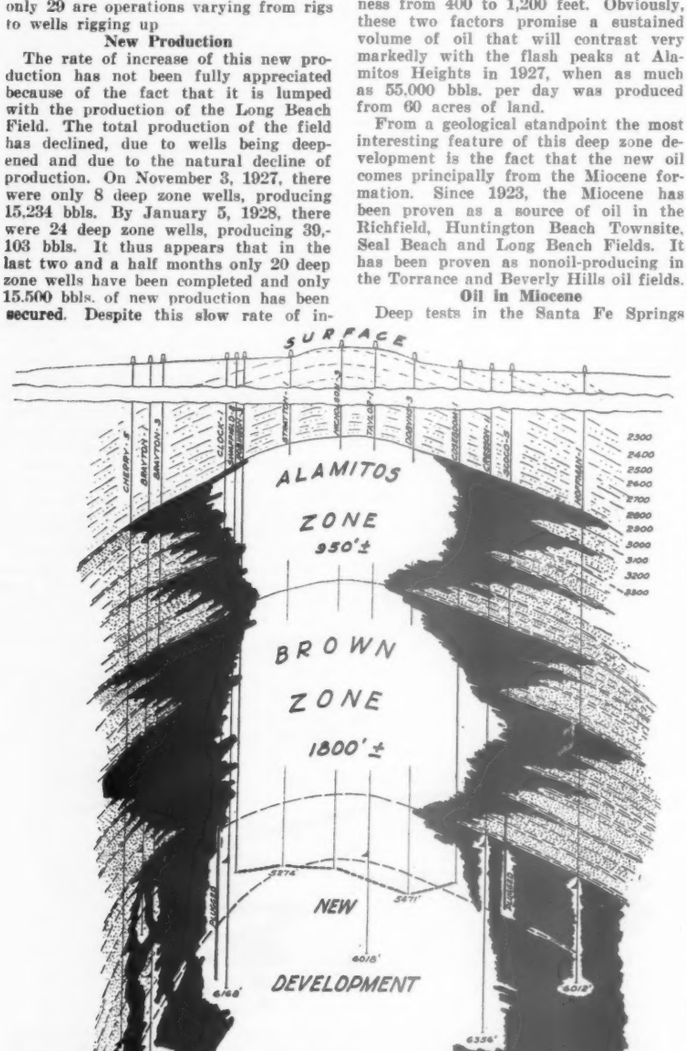

Figure 5—An [illegible] north-south cross-section through the Long Beach Field showing the relation of the newly-developed deep zone to the earlier productive zones.

Late Fields

(Continued from Page 38)

to 2,970 feet, and is drilling at 2,980 feet with a good showing of oil. The well is estimated as good for 125 bbls. after a shot, as the shots make good wells in this sand in Kansas. The oil is 43.2 gravity.

NORTH LOUISIANA

SHREVEPORT, La., Apr. 10.—Flowing through one 3-inch line with the gate only partly open, Ohio Oil Co.'s No. 1 Bodcaw, Section 15-21-10, Webster Parish, discovery well of the 4,600-foot pay in the Trinity group in Cotton Valley, put 6,100 bbls. of 49.4 gravity clean oil into tanks during the last 24 hours. It had previously been flowing through 1-inch choke in a 4-inch line through a smaller separator and a 3-inch line with the gate cracked, doing slightly better than 3,000 bbls. What it would do wide open is a matter of conjecture, to be determined only when there is sufficient tankage to take care of it. Louisiana Petroleum Co.'s No. 1 Peyton, Section 25-23-12, Bossier Parish, in the Cartersville Gas Field, was completed today at 3,079 feet, gauging around 40,000,000 feet. It is an offset to Palmer Corp.'s No. 1 Robertson, recent'y completed pumping 300 bbls. fluid, 50 per cent water, at the same depth.

WEST TEXAS PURCHASES

SAN ANGELO, Tex., Apr. 10.—The Cosden Co., Inc., of Fort Worth has contracted to purchase a half interest in Grisham-Hunter Corp.'s No. 1 Sievers (Rathje & Connor) in Reeves County, and Cranfill & Reynolds of Dallas have bought a half interest in Tulsa Dril'ing Co.'s No. 1 Kirkpatrick Brothers in northern McCulloch County. Both tests are considered promising in or near areas that produce high-gravity oil.

Cosden obtains a half interest in No. 1 Sievers, the 80 acres on which it is located and 960 acres checkerboarded about the well for $70,000.

WIND STORM DAMAGES KANSAS OIL PROPERTY

WICHITA, Kans., Apr. 7.—Windstorm damage in the Kansas oil fields, Wednesday, totaled at least $100,000, it was estimated by insurance adjusters.

White Eagle Oil & Refining Co., Derby Oil Co., T. C. Johnson, Vickers Petroleum Co. and Larobb Oil Co. lost a total of 48 rigs, worth $24,000.

The Augusta refinery of the White Eagle company sustained damage of $10,000 to tanks and the plant.

The Empire Oil & Refining Co. was the heaviest loser with 60 derricks down and a great deal other property damage. The Derby Oil Co. of Wichita ran a close second with 18 rigs destroyed. A total of at least 150 rigs were completely wrecked by the storm which swept Cowley, Butler, Greenwood and Marion Counties.

With few exceptions, no insurance was carried on rigs. The Empire carried complete coverage. Damage to its properties will run in excess of $30,000, it was said.

Scores of small buildings, including pump stations and other buildings were destroyed in Butler and Greenwood Counties.

The Empire company's natural gasoline plant at Sallyards in Greenwood County was damaged. Heavy losses were sustained by the Skelly Oil Co. in Greenwood County where two pump stations and 10 derricks were destroyed. Company telephone lines in all districts were put out of commission. Most of the rigs destroyed were over pumping wells. Many will not be replaced because they were over wells pumped by power outfits.

White Eagle Oil & Refining Co. lost 17 rigs, 11 in Greenwood County, 1 in Butler and 5 in the Osage Nation. Derby Oil Co. lost 18, and the Larobb Oil Co. lost 10, of which 3 were in Greenwood County, one at Arkansas City and 6 at El Dorado. Vickers Petroleum Co. lost 3. T. C. Johnson lost 12.

OXFORD TOWNSITE CASE RESTRICTION IS UPHELD

WASHINGTON, D. C., Apr. 7.—In the case of C. A. Marks and others, complainants, versus the City of Oxford and others, defendants; C. L. Ramsey and Alick M. Ramsey, complainants, versus the City of Oxford and others, defendants, in the United States District Court for the District of Kansas, Second Division, the defendant city enacted an ordinance to regulate drilling for oil and gas. It undertook to provide that but one well should be drilled in a city block in a certain part of the city.

It was provided that that well should be drilled by the lessee who held leases for the larger amount of acreage within the block; that any lessee must agree to drill promptly; and that owners of property not under contract with the driller should have an option of participating in the expense of the well and a proportionate share of all oil lifted by the well. And it was enecated that if the owner did not care to embark in the drilling business, he should have the usual royalty of one-eighth of all oil or gas produced from under his property.

Mutual bonds were required of the driller and the owner who exercised the option to participate in the drilling.

The court held that the ordinance was reasonably adapted to the situation, and was within the police power and valid.

SAMUEL WEBSTER BRECHT DEAD

Samuel Webster Brecht, veteran driller, was found dead at his home in Bristow, Okla., on Friday. He lived alone and had been dead about 24 hours when discovered by friends. Mr. Brecht had been engaged in the oil business for many years beginning in the Eastern Fields and working westward with the trend of developments.

State Commission Likely Will Adopt Plan of Operators

AUSTIN, Tex., Apr. 9.—It is not expected the Texas Railroad Commission's order designed to curtail production in Winkler County will be changed to any great extent when Hendricks Field operators meet in Austin April 13 to consider the matter.

There is a wide difference of opinion concerning the extent of police power the commission possesses to enforce any ruling it may make. However, most legal minds of oil companies hold an emergency exists in Hendricks and it is not likely a conservation order will be contested, if existing contracts are recognized.

All questions of antitrust law violation as a result of pinching down production in Winkler will be obviated by the Railroad Commission's plan. It was pointed out the Austin Court of Civil Appeals recently held the State can not complain of acts performed at the instance of its own agencies. If the commission orders a reduction the Attorney General can not sue, charging anti-trust violations because the oil companies would be complying with rules laid down by an agency of the government, many attorneys claim.

The plan the Railroad Commission proposes to adopt either as a whole or amended is substantially the plan submitted by the Committee of Seven appointed several weeks ago to try to bring operators to an agreement. The text of this plan was published in the April 5 issue of The Oil and Gas Journal.

HUMBLE PIPE LINE CO. DREDGING AT ISLAND

HOUSTON, Tex., Apr. 9.—Humble Pipe Line Co. started work the past week, according to Humble officials, on dredging at Harbor Island preparatory to the possible building of a terminal and loading docks there. This is approximately 9 miles to the east of Ingleside (Corpus Christi), the present coast terminus of the company's trunk line from the West Texas fields.

Although the company was successful in the court fight of the State of Texas seeking to restrain the company from laying a loading line across Corpus Christi Bay at Ingleside and building of deep-sea loading docks in the Gulf off Mustand Island, company officials say they have practically abandoned that project in favor of the Harbor Island plan.

The latter plan, however, is contingent on the United States Government deepening the channel through Aransas Pass because without deepening of the channel the Humble still would not be able to load ships to capacity any better than at Ingleside without the deep-sea loading dock.

The Harbor Island project will necessitate the extension of the West Texas-Ingleside pipe line a distance of approximately 9 miles but would eliminate the difficult laying of a line across deep water, as at Ingleside. The Harbor Island terminal plans will not interfere with the Humble Oil & Refining Co.'s refinery, now building at Ingleside. Work on the latter is being rushed and will be completed by early July.

KANSAS GEOLOGISTS MEET

F. A. Bush, paleontologist connected with the Sinclair Oil & Gas Co.'s geological department, was the principal speaker at the April luncheon and meeting of the Kansas Geological Society, which was held at Wichita, April 7.

Mr. Bush's subject was "Laboratory Methods of Micropaleontology, and Notes on Kansas Stratigraphy." He gave a very detailed recital of various methods used by the paleontologist in determining underground conditions, and spoke extensively on Kansas stratigraphy.

MUSKEGON PRODUCING 1,000 BBLS.; MONROE COUNTY ALSO GETTING PLAY

By Special Correspondent

MUSKEGON, Mich., Apr. 7.—Muskegon today has the largest producing oil field in the State of Michigan as the result of the completion of five new wells within the past week with an aggregate daily flow of more than 900 bbls. of crude oil. The total daily production, including the discovery and second well in the field, both drilled by the Muskegon Oil Corp., exceeds 1,000 bbls.

In addition to these seven producing oil wells ranging from 25 to 350 bbls. each in daily production, there are two gas wells in the field, said to be the largest in the State by R. B. Newcomb, assistant to R. A. Smith, state geologist. The daily flow of the gas wells has been gauged at 5,000,000 and 4,000,000 feet. Both are now shut in although attempts are being made to drill the smaller one into a producing oil well.

Since the field was opened with the completion of the first well as a dry hole last September, there have been four other "dusters." Six wells are drilling, rigs are being moved to six locations, one additional location has been announced and hole was abandoned at about 700 feet when a bit was lost and could not be recovered.

Five of the seven producing oil wells have enough gas pressure to cause them to flow into the auxiliary tanks set up near the wells. The other two have a plentiful supply of oil but no gas flow to bring it to the surface necessitating pumping to get the fluid.

Daily production of the five flowing wells at the present time is as follows: Muskegon Oil Corp.'s No. 1 Reeths, or discovery well, 25 bbls.; Muskegon Oil Corp.'s No. 1 Figge, 90 bbls.; Joliet-Morris Development Co.'s No. 1 Nichols, 300 bbls.; Dixie Oil Co.'s No. 1 Figge-A, 200 bbls., and Muskegon Development Co.'s No. 1 Hartman, 350 bbls. Although the other two producers will have to be pumped, it is estimated they will yield as follows: Muskegon Oil Corp.'s No. 1 Herman Heinz, 50 bbls.; and J. B. Reed's No. 1 Shoup, 25 bbls.

Trend to South

Practically all of the wells completed, drilling or moving in are located in Sections 8 and 9 of Muskegon Township. All of the producing oil and gas wells are located in the northern half of these two sections. Sections 3, 4, 5, 6, 7, 17 and 28 have had at least one location since the field was opened. Indications at present are that the only possible directions for enlargement of the field are to the south and southeast of the present producers.

Five dusters have been drilled. The dry wells are as follows: Muskegon Oil Corp.'s No. 1 Hazekamp, SW NW, Section 28; Johnson Oil Refining Co.'s No. 1 Cihak, NW NW, Section 3; A. W. Bowers and A. W. O'Keefe's No. 1 Smith, NE SW, Section 3; West Michigan Oil Syndicate's No. 1 Marquard, SW SE, Section 7; and the Lake Shore Petroleum Co.'s No. 1 Dow, SW SE, Section 5.

Two of the six drilling wells were shot, namely: Johnson Oil Refining Co.'s No. 1 Harley Smith, SE SE, Section 5, and the Citizens Petroleum Co.'s No. 1 Becker Brothers, NE SW, Section 4.

The other four wells now drilling are: Bulldog Oil & Gas Co.'s No. 2 Giles, SE SE, Section 6; A. S. Cochran's No. 1 Taggert, SE SE, Section 5; Reed Oil Co.'s No. 1 Torrent, NE NW, Section 17; and Muskegon Oil Corp.'s No. 1 Torrent, SW SE, Sestion 8. The first two are nearing the oil sands of the Traverse formation. The other two have just been started.

Rigs are being moved in and erected upon six other locations; Muskegon Development Co.'s No. 1 Albert Heinz, NE NE, Section 8; Dixie Oil Co.'s No. 1 Figge-B, NW NE, Section 8; Muskegon Oil Corp.'s No. 1 Kooi, SW NE, Section 8; Glenn M. Porter's No. 1 Workman, SW NE, Section 8; Charles P. Brandt's No. 1 Host, SE SE, Section 5; and William P. Bradley's No. 1 Burns, SE SE, Section 5.

The other two of the total of 28 projected wells are the Bulldog Oil & Gas Co.'s first attempt at a well which ended in the loss of a bit at about 700 feet and the location announced by the Waje-sel Oil Co., of Oklahoma, organized by N. D. and Ray Steele, of Tulsa, in conjunction with a group of Muskegon Heights, Mich., business men. They announced they would drill on a 2-acre lease owned by Charles Reeths, in the SW SW, Section 4, about 1,000 feet north and west of the first two wells in the field.

New Locations

Indications now are there will be few new completions for some time as but two of the four wells now drilling, in addition to those which were shot, are approaching the pay sands. This leaves only two now drilling with but four more upon which rigs are being built in preparation for drilling.

Two of these new locations upon which rigs are being built will be offsets to the Joliet-Morris Nichols well, which came in March 30 with an initial production of 500 bbls. The flow dropped sharply to but 300 bbls., April 6. On the same day, the Dixie's No. 1 Figge-A, which came in March 31, at 400 bbls. per day, also fell off in production to 200 bbls. It is believed both wells were mudded off at the bottom retarding the flow.

The outlook is favorable, it was stated by D. A. Powell, vice president and general manager of the Muskegon Traction & Lighting Co., for successful negotiations between the producers and the gas company for the use of the natural gas, about 10,000,000 feet of which is now flowing from the field.

The production of the Muskegon Field is being shipped to the Standard Oil Co. of Indiana refinery at Zilwaukee, near Saginaw, Mich., which has not been kept busy by the rapidly dwindling production of the Saginaw Field, now reported to be doing but 600 bbls. a day from 30? wells.

Gravity of the Muskegon oil has increased from 36.2 and is now running from 37 to 38 gravity increasing the price received by the producers from the Dixie Oil Co. slightly to about $1.35 per barrel.

W. W. Waldron, of Shreveport, La., has been detailed to the Muskegon Field as superintendent for his company, the Dixie Oil Co., a subsidiary of the Standard of Indiana.

That future operations will be largely in the Muskegon River flats is indicated by the present outline of the point at which the formation drop off rapidly to the north, northeast, northwest and west. This leaves but the south and southeast, or the river flats property.

It will be difficult to reach this property for several weeks as the marshy flats are covered with water. It will cost considerably more to operate since piles must be driven for rig foundations.

Deerfield-Dundee Field

Following the development work in the Muskegon Field another prospective area shows up in the western portion of Monroe County and the eastern part of Lenawee County, in the extreme southeastern corner of Michigan. The oil is found in the Trenton Rock formation. Close to 30,000 acres has been leased during the past few weeks in these counties.

This new development is an offshoot to the old Trenton Rock Field, and similar to the Tiffin, Ohio, portion of the Lima Field, which gets its oil at a greater depth.

FOUND ANSWERS TO MANY QUESTIONS HE THOUGHT COULD NOT BE ANSWERED

CHICAGO, Apr. 7.—"I want to commend to every thinking citizen of the United States 'The Oil Industry's Answer Today,' published recently by The Oil and Gas Journal," Ernest Greenwood, author and magazine writer, declared here today. Mr. Greenwood has been here attending the sessions of the American Oil Burner Association where he gathered material for a book on the development of modern fuels. His latest book, "Aladdin, U.S.A.," dealing with the electrical industry, was recently released by Harper & Brothers.

In commenting on the great fund of information contained in "The Oil Industry's Answer Today," Mr. Greenwood said:

"After spending months searching for information in preparation for the writing of my forthcoming book, 'Prometheus, U.S.A.,' I found in it the answers to many questions which I had made up my mind could not be answered. In my opinion the suggestion that the production of oil should be regulated by the Federal Government is disposed of for all time by the leading editorial in 'The Oil Industry's Answer Today.'"

ELECTRICAL ASSOCIATION FORMED IN OIL INDUSTRY

The Petroleum Industry Electrical Association, recently organized, will hold its next annual meeting in Tulsa, according to a report from T. J. McMahon, of Houston, Tex., who was elected president.

"The new association will weld for mutual helpfulness, the entire telephone, telegraph and electrical systems of the numerous oil and gas pipe line companies, refineries and the entire cycle of the petroleum industry in the Southwest," Mr. McMahon said. "Later we expect to make it national in scope."

Officers elected at the initial meeting which was held in Houston were: T. J. McMahon, Texas Pipe Line Co., president; F. S. Leonard, Shell Pipe Line Co., St. Louis, Mo., first vice president; C. E. Foster, Oklahoma Pipe Line Co., Muskogee, Okla., second vice president; W. T. Bulla, Empire Pipe Line Co., Bartlesville, Okla., treasurer; and H. E. Browne, Prairie Pipe Line Co., Independence, Kans., secretary.

The companies having members in the new association, own and operate over 100,000 miles of telephone and telegraph systems, connecting all the branches of the industry in the Mid-Continent and Gulf Coast fields. In addition to this, some radio telegraph stations are owned and operated.

BRADFORD MEETING MAY 18-19

The meeting in Bradford, Pa., of the eastern district of the division of development of the American Petroleum Institute will be held May 18 and 19 instead of May 1 and 2 as originally planned. The first day's session will be devoted to papers and discussion of production problems in the eastern fields. The second day will be devoted to field trips to various points of interest showing flooding methods now used for increasing the recovery of oil in the Bradford-Allegany area.

DEATH OF F. A. GRIFFITH

Frank A. Griffith, a director in the Union Trust Co. of Jamestown, N. Y., died on shipboard on April 4 while en route to Los Angeles, Calif. Mr. Griffith was formerly cashier and later vice president of the Columbia Trust Co. of Pittsburgh, and previous to that had been engaged in the production of oil in the Bradford Field in Pennsylvania.

GASOLINE MARKET STRENGTHENS APRIL 1, TANK WAGON SHOWS

A gradual strengthening of the retail market is evidenced by the elimination of abnormally low prices in several of the price cutting centers and while there was no general change the average gasoline tank wagon price in The Oil and Gas Journal's 50 cities shows an advance from 14.71 cents on March 1, to 14.79 cents on April 1.

The difference is not great, but the trend is in the right direction and is acting as a strong influence in allowing tank car refinery prices to be advanced. The tendency toward higher a v e r a g e prices has been apparent since December 1 of last year and since then the average has been raised from 14.21 cents to 14.79 cents, or better than one-haf cent. One year ago the average was 16.16 cents and was declining rapidly. The decline had started August 1, 1927, and continued until last December with a loss of approximately 5½ cents over that period.

While the recovery has amounted to only a small part of the loss, the trend is upward at a time that is most opportune. If the retail price schedule in the various parts of the country can be stabilized and allowed to continue to advance higher prices will be assured during the p e a k consumption period, the time when a fraction of a cent means considerable in the total revenue. Marketing companies are observing a very conservative program in advancing prices and the policy in general has been first to settle price differences in price cutting centers and then a general advance may be more assured of support.

The adoption of a 5-cent gasoline tax in Virginia on March 22, increased the average tax slightly, the former tax being 4.5 cents. This was the only tax change for the month. Numerous cases are now being investigated in the state courts with the idea of testing the constitutionality of the respective state gasoline tax laws and over the next year it is probable this question will be given considerable attention. Probably more attention will be paid to determining the legal status of these laws than in attempting to increase the taxes, and taxes in general are not expected to advance during 1928 as in the past few years.

AVERAGE TANK WAGON PRICE IN 50 CITIES

(Exclusive of tax)

March 1, 1926	17.267
April 1	18.517
May 1	18.487
June 1	19.607
July 1	19.697
August 1	19.697
September 1	19.587
October 1	19.167
November 1	18.187
December 1	17.607
January 1, 1927	17.567
February 1	17.469
March 1	17.007
April 1	16.160
May 1	15.320
June 1	14.720
July 1	14.86
August 1	14.89
September 1	14.62
October 1	14.39
November 1	14.32
December 1	14.21
January 1, 1928	14.29
February 1	14.33
March 1	14.71
April 1	14.79

GASOLINE PRICES EFFECTIVE APRIL 1, 1928

Table showing gasoline tank wagon prices as of April 1, 1928, exclusive of taxes in 50 representative cities, including the amount and the date of changes since March 1, 1928. High and low prices and state taxes also given.

	Prices Mar. 1	Changes		Prices Apr. 1	High and Low — 1927 —		— 1926 —		Tax Apr. 1, 1928
Birmingham, Ala.	14.0	....	....	14.0	18.0	14.0	20.0	16.0	4.0
Phoenix, Ariz.	19.0	....	....	19.0	19.0	16.0	22.0	19.0	3.0
Little Rock, Ark.	14.0	15 15.0	28 14.0	14.0	15.0	11.0	18.0	14.0	5.0
San Francisco, Calif.	14.0	....	....	14.0	14.0	9.0	16.0	13.0	3.0
Denver, Colo.	13.0	16 14.0	..	14.0	18.0	13.0	20.0	16.0	3.0
Hartford, Conn.	18.0	....	....	18.0	22.0	18.0	21.0	17.0	2.0
Dover, Del.	16.0	....	....	16.0	19.0	16.0	20.0	17.0	3.0
Jacksonville, Fla.	13.0	....	....	13.0	16.0	10.0	19.0	12.0	5.0
Atlanta, Ga.	13.0	....	....	13.0	18.0	10.0	21.0	14.0	4.0
Boise, Idaho	19.5	....	....	19.5	22.5	19.5	24.0	20.0	4.0
Peoria, Ill.	13.2	....	....	13.2	18.2	9.0	19.2	10.5	...
Chicago, Ill.	14.0	....	....	14.0	17.0	14.0	18.0	15.0	...
Indianapolis, Ind.	13.2	....	....	13.2	18.2	10.2	19.2	16.2	3.0
Des Moines, Iowa	11.9	....	....	11.9	16.0	9.9	19.5	16.0	3.0
Wichita, Kans.	11.8	..	..	11.8	15.8	10.8	16.8	14.8	2.0
Louisville, Ky.	13.0	....	....	13.0	17.0	13.0	20.0	17.0	5.0
New Orleans, La.	12.5	....	....	12.5	14.5	11.5	17.5	13.5	*3.0
Augusta, Me.	17.0	..	..	17.0	22.0	17.0	21.0	17.0	4.0
Baltimore, Md.	16.0	....	....	16.0	19.0	16.0	19.0	15.0	4.0
Springfield, Mass.	17.0	6 18.0	..	18.0	22.0	12.0	21.0	17.0	...
Detroit, Mich.	13.8	....	....	13.8	18.8	11.8	19.8	16.8	3.0
Duluth, Minn.	12.5	..	..	12.5	19.5	12.5	20.5	15.5	2.0
Natchez, Miss.	12.5	..	..	12.5	15.5	12.5	18.5	15.5	4.0
Kansas City, Mo.	10.9	..	..	10.9	17.9	10.9	18.9	15.9	*3.0
Helena, Mont.	19.5	....	....	19.5	22.0	19.5	24.0	21.0	3.0
Omaha, Neb.	13.25	....	....	13.25	14.25	12.25	19.25	14.25	2.0
Reno, Nev.	18.0	....	....	18.0	18.0	15.0	19.5	16.5	4.0
Newark, N. J.	16.0	....	..	16.0	19.0	16.0	19.0	15.0	2.0
Albuquerque, N. Mex.	16.0	....	....	16.0	20.0	16.0	26.5	20.0	5.0
New York, N. Y.	17.0	....	..	17.0	22.0	17.0	21.0	17.0	...
Charlotte, N. C.	16.0	....	....	16.0	19.0	16.0	19.5	15.5	4.0
Fargo, N. Dak.	15.9	....	....	15.9	20.9	12.0	21.0	18.9	2.0
Cleveland, Ohio	14.0	....	....	14.0	19.0	14.0	20.0	16.0	3.0
Tulsa, Okla.	12.0	....	....	12.0	15.0	10.0	17.0	13.0	3.0
Portland, Ore.	14.5	....	....	14.5	14.5	11.0	16.0	13.0	3.0
Philadelphia, Pa.	15.0	....	....	15.0	19.0	12.0	20.0	17.0	*3.0
Providence, R. I.	17.0	18.0	....	18.0	22.0	17.0	21.0	17.0	3.0
Charleston, S. C.	15.0	....	....	15.0	19.0	15.0	19.5	15.0	5.0
Huron, S. Dak.	14.5	....	....	14.5	19.5	11.5	20.5	14.0	4.0
Memphis, Tenn.	14.0	....	....	14.0	15.0	10.0	18.5	13.5	3.0
Dallas, Tex.	9.0	2 10.0	....	10.0	13.0	10.0	17.0	13.0	3.0
Salt Lake City, Utah	16.5	....	....	16.5	20.5	16.5	22.5	18.5	3.5
Burlington, Vt.	17.0	....	....	17.0	22.0	17.0	21.0	18.0	2.0
Norfolk, Va.	16.0	....	....	16.0	18.0	16.0	19.0	15.0	3/22 5.0
Washington, D. C.	16.0	....	....	16.0	19.0	16.0	19.0	15.0	2.0
Charleston, W. Va.	16.0	....	....	16.0	18.0	16.0	19.0	15.0	4.0
Milwaukee, Wis.	13.1	....	....	13.1	18.1	13.1	19.1	16.1	2.0
Casper, Wyo.	14.0	....	....	14.0	18.0	14.0	20.0	17.0	3.0
Seattle, Wash.	14.5	....	....	14.5	14.5	11.0	16.0	13.0	2.0
Minneapolis, Minn.	13.0	....	....	13.0	15.2	11.0	20.2	15.2	2.0
Average price	14.71	....	....	14.79	18.15	13.55	19.717	15.713	3.01

*State tax 2 cents, remainder city tax.

Based on dumps of 50 gallons within the Standard Oil Co. of Indiana territory where quantity discounts are given. Actual tank wagon prices in the territory are 1 cent higher except in Chicago.

BIG STORAGE PROGRAM IS BEING CARRIED ON IN HENDRICKS POOL

By James H. Dameron

FORT WORTH, Tex., Apr. 9.—A survey of the storage situation in West Texas as it affects the Hendricks Pool in Winkler County shows that 4,372,000 bbls. of storage is in some stage of erection. One million barrels of this is the Roxana Petroleum Corp's 1,000,000-bbl. concrete tank nearing completion on the tank farm near Monahans in Ward County. The remaining storage is steel tankage most of which is being erected while the balance is represented in the grading being done for additional tankage.

The Gulf Production Co. has the biggest storage project ahead of it at this time. That company is building 1,200,000 bbls. of steel storage. The Roxana Corp. ranks second with 1,000,000 bbls.; Southern Crude Oil Purchasing Co. third with 560,000 bbls., and the Atlantic Oil Producing Co. fourth with 400,000 bbls.

The following table gives the number, size and capacity of tanks being built by the various companies:

Co. Name—	No Tanks	Size Bbls.	Capac. Bbls.
American Pet. Co.	2	80,000	160,000
Gulf Prod. Co.	15	80,000	1,200,000
Humble O. & R. Co.	3	64,000	
Humble O. & R. Co.	1	80,000	272,000
Magnolia Pet. Co.	2	55,000	110,000
Atlantic O. P. Co.	5	80,000	400,000
Independent O. & G.	2	80,000	160,000
Landreth Prod. Co.	3	80,000	240,000
Pure Oil Co.	2	55,000	110,000
Southern C. O. P. Co.	7	80,000	560,000
Texon O. & L. Co.	1	80,000	80,000
Turman & Maxwell	1	80,000	80,000
Roxana Pet. Corp.	1	1,000,000	1,000,000
Total	45		4,372,000

Hendricks Field stocks totaled 5,952,205 bbls. on April 1.

There is a total of 8,234,000 bbls. of steel tankage constructed in that area, leaving room for 2,281,795 bbls. Production of Hendricks is around 200,000 bbls. daily with about 128,000 bbls., leaving the field daily.

During the last week in March, the Roxana Petroleum Corp., Independent Oil & Gas Co., Landreth Production Corp., Southern Crude Co. and American company moved on an average of 52,000 bbls. daily from their loading racks to fill contracts. Pipe line companies moved on an average of 72,000 bbls. daily from the field, and the refining consumption at Pyote and Wickett was around 4,300 bbls. daily. The Atlantic company moved 35,000 bbls. daily to Midland; Humble company pumped 2,000 bbls. daily to McCamey and the Shell corporation pumped 15,000 bbls daily to McCamey.

In addition to the storage report made as of April 1, the Pure Oil Co. has since purchased sixteen 55,000-bbl. capacity tanks and the American Petroleum Co. has bought five 80,000-bbl. tanks. A few days ago Southern Crude Oil Purchasing Co. bought twenty 80,000-bbl. capacity tanks, four of which are to be built at Monahans and the remaining 16 will be erected on the tank farm in Section 9, Block B-12, Winkler County.

The Texon Oil & Land Co. is looping its 6-inch line from the field to Wickett to increase the capacity. Gulf Pipe Line Co. is laying a 6-inch line from Section 34 in Block B-5 to Section 32 in the same block where a tank farm is located.

CALIFORNIA MARKET IS REPORTED STRONGER

LOS ANGELES, Calif., Apr. 6.—The California gasoline market is stronger than it has been for many months. Tank car prices are firming up and sales have been made as high as 10½ cents without tax during the past week. It is reported that the 6-cent contracts which expired on March 31 were offered for renewal on a 4-cent basis. This fact alone has gone far towards improving the wholesale market. There has actually been a shortage of gasoline among the smaller refiners and distributors of cut price gasoline have found difficulty in supplying their needs. The result has been an advance in price which has been reflected in the retail market by an increasing reduction in "six for a dollar" signs. With the crude shut-in program now on foot and the natural decline in the production of refinable crude, an abundant supply of cut-rate gasoline will probably not be available for some time to come. Smaller refiners, especially, are endeavoring to contract any possible supply of crude.

California gasoline for export has also shown improvement. One of the large refiners is reported out of the market entirely, while most of the others are holding their gasoline for 6½ cents. The outlook for the export market is also good, for with prices strengthening in the East, California gasoline for this trade will necessarily improve in price also.

Natural gasoline remains unchanged. This market is firm at present, sales being made around 9 cents.

Demand for kerosene is holding up very well. Prices in the domestic market are firm at from 5½ to 6 cents. Large volumes are also moving in the export trade, prices in most cases ranging from 5 to 5¼ cents.

Fuel oil is also stronger. One of the major companies is buying large quantities of this commodity, presumably for cracking stock. This has apparently taken surplus fuel supplies off the market and the result is prices are firm and the market steady.

OKLAHOMA P. L. STATEMENT

The runs, shipments and stocks of the Oklahoma Pipe Line Co. in March were as follows: Runs, 3,029,429 bbls.; daily average, 97,724 bbls.; deliveries, 2,875,574 bbls., daily average 92,760 bbls.; stocks, 3,203,325 74 bbls., an increase of 148,017 bbls. over the previous month.

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Natural Gasoline and the Gas Lift

Effect of Modern Production Practice on the Manufacturing Industry. Proper Utilization of Gas

By A. C. Rubel*
Union Oil Co. of California.

I have been asked to speak on the general subject of the relation of the modern trend of production practice to the natural gas and gasoline industry. To develop such a relation it will first be necessary to review briefly the present conception of underground reservoir conditions and the mechanics of fluid movement as they affect a producing well. In past production practice the chief concern of the producer was that of getting the oil out of the hole and into his tanks and all efforts were bent to that purpose, it being assumed that beyond the actual limits of the hole little or no control could be exercised over such production. The present concern is not only to get oil to the tanks but also to get more oil out of the reservoir into the hole and it has been demonstrated that a large measure of control may be exercised over the oil at considerable distance from the hole itself and, in fact, on the entire reservoir.

The sum and substance of the new doctrines of production technology may be expressed by the text of the findings of the Marland Committee on Conservation of the American Petroleum Institute[1] which stated that "The conservation and efficient utilization of gas is of paramount importance in the conservation and economical production of oil." This report further states, "Gas dissolved in oil makes that oil more fluid, and more capable of movement through the pore spaces of the reservoir to the well; the energy stored in the same gas is the chief force behind that movement. To dissipate gas from an oil sand is to lessen the propulsive force and increase the need for it."

I believe the essence of the present trend of thought in production technology lies in the realization that gas associated with oil in a reservoir represents energy and practically the only energy available for the recovery of its oil. Efficient production of oil then means the efficient utilization of this energy which in turn means the efficient control of the natural gas associated with the oil. It is on this premise that practically all of the recent production practices are built.

Economic Utilization

Dr. W. P. Haseman[2] states the problem clearly when he says that the most efficient and economic utilization of natural gas in the production of petroleum will be attained when in production practice that control method is applied to the individual well which will result in, first:

The retention of the natural fluidity and energy in the reservoir fluids to the greatest extent possible consistent with scientific and economic conditions during the period of natural production of the field, lease or well, and second in the restoration of the depleted fluidity and energy in the reservoir fluids to the greatest extent possible * * * during the period of artificial production of a field, lease or well.

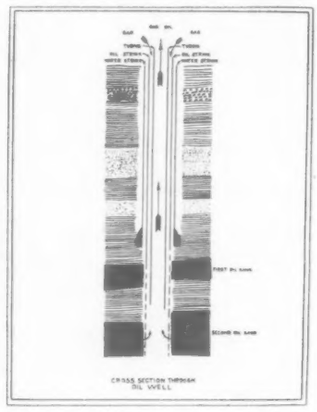
Let the figure 1 in Plate I represent a cross section through a well in the average field and let us assume that it is the first well in the sand. The completion of such a well immediately creates an area of relatively low pressure in and immediately adjacent to the hole which starts a movement of fluids in the direction of the lowered pressure. The rate of this movement is dependent on several factors, the most important being:

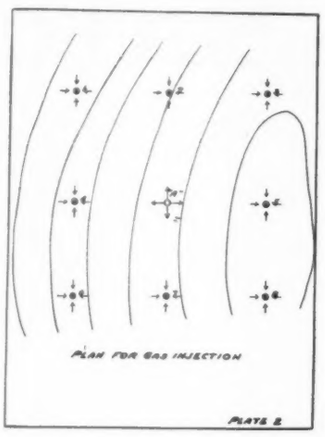
1. Pressure differential between the wall of this hole and the surrounding reservoir.
2. Character and physical state of the moving fluid.
3. Physical condition of the reservoir as to porosity, sand thickness, etc.

Three Major Factors

Of these three major factors governing the fluid movement we know something of and have some measure of control over the first, a slight control over the second and none over the third, and in each instance the only means of control must be exercised by the one device of regulating by some means the effective pressure at the wall of the hole opposite the productive sand.

Causing this movement is the expansive energy of the natural gas associated with the oil either in solution or in a free state and opposing the movement are the many factors which in the aggregate are expressed by the general term—frictional resistance.



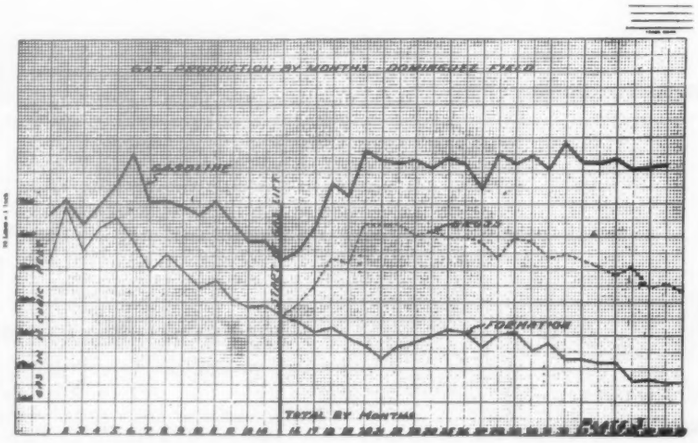


Since it is the energy contained in gas which causes the flow into the hole, the rate and volume of such flow are dependent on its proper utilization. In the Dominguez Field, for example, experiments indicate an original gas content in the reservoir of 344 feet per barrel of oil. Under flowing conditions, however, 2,400 feet were produced with each barrel. It follows then that for every barrel so produced from this reservoir approximately 5 bbls. were robbed of their energy and were left "dead" to be only partially recoverable by pumping or other methods. The ratio of recovery in this case would be as 344 is to 2,400 or approximately 14.3 per cent of the sand content.

Proper methods of back pressure control by use of tubing, "beans," gas lift and well regulated pumping were described in some detail to you by Mr. Lake in his very excellent paper on production practices which was read before this body several months past[3] and are the most effective means available under normal conditions in controlling this ratio of gas to oil and in conserving and effectively utilizing the gas energy.

In the case of Dominguez, for instance, the application of controlled back pressure, by means of gas-lift and regulated back pressure, decreased this gas production from 2,400 to 1,037 feet per barrel or about 60 per cent. On the basis of our original premise then, we should expect a corresponding increase in ultimate production in the proportion of from 344/2400 or 14.3 per cent recovery in the first instance to 344/1037 or 33 per cent recovery under controlled flow conditions. These figures, of course, are not a true index to ultimate recovery and represent only the indicated recovery ratio at two particular periods of the life of the field but they do illustrate clearly the energy principle involved and demonstrate that gas energy properly conserved during any stage of production will result in increased recovery as well as increased current production, the latter in most cases being of the least actual importance.

The effect of such practice on the natural gas and gasoline industry is vitally important although it is perhaps much more real than apparent.



During the periods of flush production in a field where wells are permitted to flow open and practically unrestricted, great gas peaks are reached which could not possibly be handled by gasoline plants and distributing facilities, resulting in the waste of billions of feet of gas, millions of gallons of gasoline and thousands of foot-pounds of expulsive energy. Back pressure control, by minimizing the gas to oil ratio has in recent fields greatly decreased this waste and has done so with but slight reduction in the current oil output and a larger increase in ultimate production of both oil and gasoline. This, to you, as casinghead manufacturers, means smaller and less sudden peak loads, longer plant life, slower decline and a greater degree of stability than ever possible before.

The satisfactory application of gas-lift is perhaps the greatest single advance to date in producing practice and its effect particularly on the gasoline industry has been great. The principles of gas-lift and its manner of application are probably well known to you all. It is simply a method of supplementing the natural gas energy contained in the oil as it enters the hole to assist in lifting it to the surface. There is a certain minimum volume of gas under any set of conditions which is required to lift a barrel of oil to the surface. If that volume is not available, the well will not flow and artificial means must be employed. Gas-lift is one of these means and the result of its application is to maintain a high gross gas production which approximates in volume the original gas under natural flowing conditions.

Curve for Two Leases

Plate 3 is a gas and gasoline production curve for two leases in the Dominguez Field which are almost entirely operated by gas-lift. Up to the start of gas-lift the gas production followed a normal decline and the gasoline production in the absorption plant dropped accordingly. Soon after the start of the gas-lift program the gross gas increased to practically the original volume it had produced under flow conditions and the gasoline production has remained constant in spite of the fact that the formation gas production has decreased almost 80 per cent. The effect on the absorption plant is to maintain a steady production within the capacity of the equipment. In addition, such a method admits of great flexibility in plant operation in the following manner:

Let it be assumed that the capacity of this plant is approximately 700,000 feet per day, which was about the volume handled during the first five months of production, after which the gas declined until at the start of gas-lift the plant was approximately 40 per cent under capacity. The circulated gas brought the input gas back to capacity and has held it there with a very slow decline since that time, the formation gas in the meantime declining to approximately 150,000 feet or 21 per cent of the original. Suppose new development should increase this formation gas to 700,000 feet, the plant could still operate to capacity without overloading or loss of gasoline by passing the excess gas around the plant and compressing it "wet" for recirculation, keeping just enough through the plant for efficient operation. In this manner a plant in conjunction with a gas-lift system may handle gas for about its absorption capacity without loss of gas or gasoline.

Return to Reservoir

The next big step in production and the one occupying the center of attention among producers at the present time is the process of returning to the reservoir the gas produced with the oil for the

(Continued on Page 162)

*Before California Natural Gasoline Association.

[1]The report of the Technical Sub-Committee of the Committee of Seven of the American Petroleum Institute.

[2]Value of Natural Gas in the Production of Petroleum.—W. P. Haseman, A.P.I., Volume IX, No. 7, 1928.

[3]Production Division of Industry Bears Close Relationship to the Natural Gasoline Department.—Mr. F. W. Lake. Read before January meeting California Natural Gasoline Association.

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Of Interest to Sales Departments

COMMON SENSE URGED IN MARKET PROBLEMS

By H. C. Smiley

A recent issue of "Nations Business" speaks editorially—"the work of the world today is done by groups"—drawing the logical inference that, frequently, waste is the result of group action, and subject to remedies from the group alone.

O. P. Cheney, of the American Exchange Irving Trust Co., puts four fundamental questions to all business.

1. In what ways are my business practices out of line with the best interests of my industry, as a whole?

2. In what ways are the prevailing business practices in the industry out of line with its own best interests and with the public interest?

3. How and why are the different branches and factors in the industry working against each other?

4. What other industries are now, or will in the future, be in active intercommodity or interindustrial competition with my industry?

It is well to note that these questions do not ask us to determine how good a job we are now doing, or to determine how many compliments are due us for the things we have accomplished. Rather, they demand a searching inquiry into our shortcomings — into the things that human nature prefers to let alone.

Knowledge of Shortcomings

A knowledge of the existence of his shortcomings, fires every good business man with a desire to eliminate those faults, whether it be personal or a matter of better management.

If the petroleum industry will answer honestly, these questions, then the first step has been taken toward alleviating disastrous conditions.

There can be no denial of the fact that our troubles are the result of group action—or of the lack of group action. Action that brings too much crude to the surface. Action that refines more crude than is necessary to supply demand. Combined action that results in waste.

We must admit that perfection is not attainable. Even though our sources of raw material were certain both as to locality and quantity, the presence of distinctly poor planning and management, as expressed in short-lived producers, refiners, and marketers must be expected. An industrial world, founded on the premise that individual initiative and ability is supreme, must recognize that it will of necessity find within itself varying degrees of ability, running from the poorest to the best.

Reason and logic force the conclusion that the best managed units of the industry will gravitate together for self-protection—for the establishment of standards and ethics of business practice that will grant to them corporate and economic life. Only in this way can the industry be made substantial in the eyes of the investor, on whose investments the industry depends. Only in this manner can the consumer be educated to look for quality rather than price in refined products.

When the industry through its leaders has made itself substantial it can then expect to make its two great markets—the investor and the consumer markets—equally substantial.

Common Basis of Thought

It follows that a common basis of thought must be found, before this community of industrial interest can exist. What better method of finding this common basis of thought, than a searching self-analysis, made along the lines of Mr. Cheney's questions?

It has been said that the greatest waste in our industry lies in the oversupply of retail outlets for the refined product.

(Continued on Page 168)

Short Talks on Refinery Products

By W. T. Ziegenhain

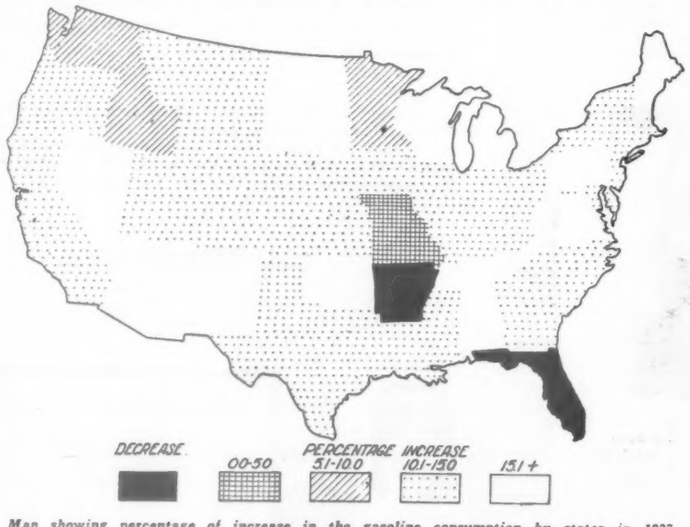
HOW VARIOUS GRADES OF STRAIGHT LUBRICANTS ARE MADE

In the preceding issue of The Oil and Gas Journal the processing of the lubricating oil cut was discussed, including the distillation of the cut to separate it from the gasoline, kerosene, etc. and the separation of the wax and oil by cooling the mixture and then straining out the wax as the oil is forced through a series of canvas plates.

As the dewaxed oil comes from the wax house it contains all of the several grades of straight lubricants and is called pressed distillate because it has gone through the wax presses. The next job is to separate out the various grades of lubricants. This is done by distillation just as gasoline is separated from kerosene. Each lubricating oil distills at a different range of temperature and as the mixture is heated in the still, first the very light lubricating oil distills over, comparable to the spindle stock used for oiling sewing machines, fire arms and other very light work. This oil has a viscosity of between 70 and 80 at 100 and cannot be used for automobile lubrication. As the distillation progresses heavier and more viscous oils distill off and any particular cut may be taken. Ordinarily the second cut includes all of the oil distilling over to make a 100 viscosity, nonviscous oil, sometimes used for the lubrication of light machinery, as a grease oil or twine oil. There is only a limited market for these light lubricants any many times these cuts have to be thrown into gas oil. The most valuable lubricant is the heavy portion yet remaining in the still and instead of distilling that overhead it is allowed to remain in the still and is concentrated to the desired viscosity by distilling off the lighter fractions. After the oil is concentrated to the desired viscosity it is finished like the other cuts previously taken. Thus three different grades of lubricants are made and each is then treated and filtered to make finished products, suitable for use direct or for compounding with other oils to make many special lubricants.

The treating operation consists merely of agitating the oil with concentrated sulphuric acid in a lead-lined tank in order to remove the unstable hydrocarbons and the asphaltic residues. The excess acid is drawn off and the oil is then neutralized with a caustic and water solution and allowed to settle. Then the oil is ready to be filtered. In this operation the oil is percolated over special clay, ground to a rather fine mesh. The earth is white when new and the particles are uniform in size, usually about the size of wheat grains or slightly finer. The oil is pumped into tanks filled with this earth and it slowly seeps through to the bottom and is drained off to the finished storage. The earth absorbs certain impurities and improves the brightness and color of the oil. After filtering these oils are each ready for blending or direct use.

INCREASE OF GASOLINE CONSUMPTION BY STATES



Map showing percentage of increase in the gasoline consumption by states in 1927 compared to 1926.

Many states continue to show increases in their gasoline consumption of more than 15 per cent, as shown by a map recently issued by the Western Petroleum Refiners Association. No grouping of states of the same percentage increase can be made, but it is significant that states lying in the zone of concentrated population extending from Pennsylvania and New York west to the Mississippi River should show the high percentage increase in 1927 considering the tremendous volume consumed in 1926. States such as Nevada, New Mexico and Arizona need to consume but a small additional volume of gasoline to increase their percentage because of the small total consumed. As the states which are densely populated continue to show great gains the point of saturation is no doubt far removed from the present.

Since the issuance of the map, the Bureau of Mines has revised the consumption for several states. Figures just reported show the following percentage changes, not shown in the map: Missouri increased 11.2 per cent; Michigan, 10.3; Connecticut, 19.0 and Vermont, 19.9.

GASOLINE TAXES BY MEXICAN STATES

MEXICO CITY Mexico, Apr. 6—(By Trens Agency).—The amount of taxes on the producton and importation of gasoline, during the year 1927, and the State or territory to which the gasoline causing the tax was consigned, in liters and pesos, Mexican gold, according to the Petroleum Section, Bureau of Special Taxes, Department of Finance, was:

States—	Liters	Taxes
Aguascallentes	1,674,240	$50,227.20
Baja California	6,676,635	197,299.05
Campeche	1,596,903	47,907.09
Coahuila	12,537,614	376,128.42
Colima	11,816,245	354,487.35
Chiapas	474,842	14,245.26
Chihuahua	7,849,893	235,496.79
Distrito Federal	10,333,051	309,991.53
Durango	1,267,452	38,023.56
Guanajuato	2,974,939	89,248.17
Guerrero	665,240	19,957.20
Hidalgo	845,083	25,352.49
Jalisco	6,020,858	180,625.74
Mexico	6,857	205.71
Michoacan	1,246,440	37,393.20
Nayarit	28,218	846.54
Nuevo Leon	7,050,601	211,518.03
Oaxaca	528,533	15,855.99
Puebla	63,384	1,901.52
Queretaro	803,962	24,118.86
Quintana Roo	433,567	13,007.01
San Luis Potosi	3,564,678	106,940.34
Sinaloa	3,919,259	117,577.77
Sonora	12,533,539	376,006.17
Tabasco	1,335,560	40,066.80
Tamaulipas	17,903,226	537,096.78
Veracruz	73,273,873	2,198,216.19
Yucatan	4,050,499	121,514.97
Zacatecas	888,587	26,657.61
Totals	192,263,778	$5,767,913.34

GREATER CAR PRODUCTION

Passenger car production for February showed a decided gain over January and is higher for the two months of this year than during the same two months of last year, but the output of trucks has declined according to the figures just issued by the Automotive Industries. The following is the tabulation of each for the respective months over the last year:

1928—	Cars	Trucks	Total
January	212,248	27,862	240,110
February	301,145	34,727	335,872
Total	513,393	62,589	575,982
1927—			
January	211,395	42,907	254,302
February	278,997	44,421	323,418
Total	490,392	87,328	577,720
March	366,624	52,033	417,667
April	377,899	51,449	429,348
May	379,139	50,666	429,805
June	295,198	45,956	341,154
July	245,585	33,871	279,456
August	284,489	36,819	321,308
September	235,121	36,519	271,640
October	189,177	38,224	227,401
November	114,076	25,743	139,819
December	108,356	28,626	136,982
Total	3,085,086	487,234	3,572,300

STANDARD PRODUCTS WIN

CHICAGO, Apr. 9.—The plane in which Eddie Stinson and George Haldeman won the world's endurance test by remaining in the air 53 hours and 7 minutes was supplied with Stanolind Areo oil and Stanolind Aviation gasoline. Allan Jackson, vice president Standard Oil Co. of Indiana received a wire from the flyers passing on to the company the congratulations received at the conclusion of their flight. The consumption averaged 10 gallons of gasoline and 5 gallons of oil per hour during the entire flight.

NEW BOOKLET ISSUED

The Shaffer Oil & Refining Co. has just issued an attractive booklet, "Mighty Drops of Lubricants," in which they not only outline the use of Deep Rock products but the problem of lubrication in general. Technical data describing the properties of the various oils, the characteristics of the different machines, metals and loads is discussed.

NATURAL GASOLINE

for controlled VOLATILITY

WHY the hot spots and complicated manifolding on present day automobiles? To burn low grade fuel. Plenty of B T U's, yes! But what of Volatility—the kick and easy starting qualities motorists more and more demand?

To meet these requirements, the Phillips Petroleum Company is making "Phillips 66", a highly volatile gasoline with an initial low enough for easy starting, quick acceleration and an end-point high enough for power and economy of operation—*controlled volatility*.

Phillips, with a natural gasoline production of over 500,000 gallons a day is in a position to furnish a permanent supply of this new motor fuel. The long experience of its research department is offered refiners and jobbers on any blending problem.

Old Faithful—Yellowstone National Park
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Phillips PETROLEUM CO.
BARTLESVILLE, OKLA.

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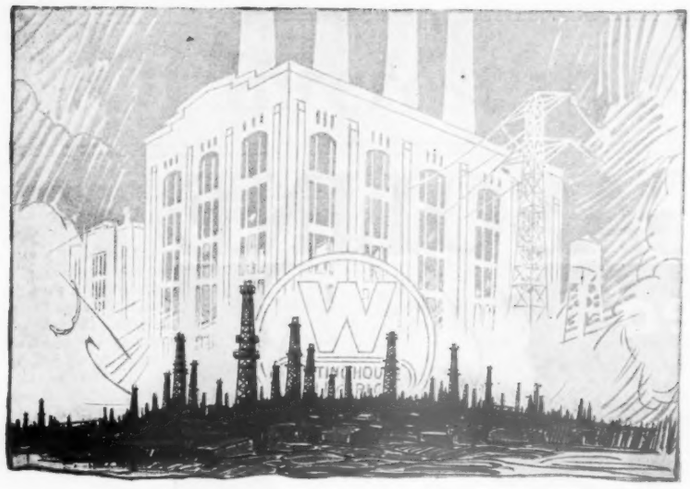

It Won't Be Long Now!

JUST as rapidly as possible, electric service companies are extending their lines to wherever active drilling operations have started. In some instances, companies have built stations to serve oil fields exclusively. Others have expanded their facilities until today miles of lines provide a constant, economical and uninterrupted flow of power 24 hours a day.

The many economical advantages and dependable operating characteristics of Westinghouse equipment for oil fields have definitely established the superiority of the electric drive over all other forms of power.

Westinghouse equipment was designed especially for—not merely adapted to—oil field requirements. Whether it is for drilling, pumping, air or gas lifts, rig lighting—or any other phase of operation where electricity is used—Westinghouse is prepared to serve with undivided responsibility.

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Sales Offices in All Principal Cities of the United States and Foreign Countries

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NATURAL GASOLINE AND THE GAS LIFT

(Continued from Page 158)

purpose of maintaining the original conditions of reservoir pressure, fluidity and energy as long as possible, thereby increasing the ultimate production and lowering its cost. This is variously known as gas injection, repressuring, gas-drive, Marietta process, etc., and may have for its primary object one of three things:

1. Increase in current production with a corresponding increase in ultimate.
2. Arresting of decline with corresponding increase in ultimate.
3. Gas Storage—This is accomplished by either an increase in current production or an arresting of decline depending on the manner in which wells are handled.

The general theory on which this process is based is the same conservation of gas energy which has been stated before, the difference being that the natural energy of the reservoir is not only conserved but additional energy is added to the reservoir itself by external means.

Pressure Differential

Plate No. 2 shows a portion of a field containing eight producing wells. Because of the fact that each well is a point of lower pressure than the adjacent reservoir there is a movement radially toward the wells as indicated by the arrows, the rate of movement and the resistance to it depending on the factors of pressure, differential, fluidity and reservoir texture noted in the foregoing. For purposes of discussion we may assume a pressure differential increasing directly as some power of the distance from the well and more or less concentric to it, the point of maximum differential being at the greatest distance or in this case at the intersection of diagonals at point "A." Under normal producing conditions there will eventually come a time, in spite of the best practice in the hole, when the resistance in the reservoir will be equal to the differential necessary for fluid movement, the forces will be in equilibrium which is the tendency of all natural systems, oil will no longer move to the hole and production will cease. The field is then spoken of as depleted but it is actually depleted not of its oil but only of the energy necessary to produce that oil. You are, no doubt, familiar with the various estimates which place the ultimate recovery of a reservoir at from 15 per cent to 30 per cent of its oil content, 25 per cent being assumed as an average for California conditions.

For illustration, let it be assumed again that immediately on the completion of these wells (Plate No. 2) a well at point "A" be drilled and the gas from the surrounding eight wells compressed and injected through "A" into the same sands. The result obviously would be, if sufficient pressure were available, to maintain a constant pressure at "A" for an indefinite period which would in turn allow a constant differential between that point and the wells. Instead of a decreasing differential and a robbing of energy from the reservoir, as is the case in normal production practice, the energy is constantly replaced and a much greater ultimate production is certainly to be expected. A similar effect might be obtained by injecting gas at any stage of the field's development.

Operating and mechanical limitations prevent the widespread adoption of this principle but it is being applied sucessfully in many parts of the country and in at least five fields in California.

As to the manner of application of the gas injection you are perhaps not vitally interested but as to its results you, as gasoline manufacturers, certainly are.

Controlled Production

To the producer this method means that where applicable gas, instead of being sold at 6 to 10 cents a thousand, may be injected and made to produce more oil and gasoline. Experience indicates, for example, in at least one California field that approximately 4,000 feet of gas will recover an additional barrel of oil and with it is approximatly 6 gallons of gasoline which is worth, in the aggregate, at the present market price, $1.48. The cost of gas compression and handling of the gas is approximately 5 cents per thousand feet, leaving a net profit of $1.28 or 32 cents per thousand feet and the gas is still available for other cycles. Under such conditions of operation it is obvious that it is not good business to dispose of at 10 cents per thousand feet a product which may be made to produce at least 32 cents and no gas should be sold from such a field.

To the producer it also means a controlled production to be drawn on heavily or held back as markets dictate without fear of loss.

To the gas company it means that wherever such operation is possible, little gas will be available for sale and, in fact, surplus gas from fields not adaptable to the process may be transported and used in fields which are adaptable. It also means that in periods of peak gas production and low consumption such as is anticipated during the coming summer the surplus gas may be stored in suitable reservoirs to be drawn on at such future time and in amounts as may be required. Such a system is in operation at present on a scale of about 8,000,000 feet per day in two of the Los Angeles Basin fields and it is planned to increase this figure to 30,000,000 feet within the next 60 days, to handle the expected surplus from Signal Hill and Ventura.

To the natural gasoline industry it means a constant supply of gas under fairly uniform conditions almost for a great portion of the life of a field. Instead of a three to five-year write-off period, necessitating a limitation on investment often to the detriment of operation, plants may be constructed with a degree of permanence which will permit of maximum operating efficiency. It means an enormous increase in casinghead gasoline production, the economic effect of which I am not prepared to foretell and a stability of production which will remove the speculative element from the industry and place it on an equal with refineries.

In the words of Mr. E. W. Clark, president of the American Petroleum Institute, etc.:

"In my opinion the oil business is entering a new era. Conditions and practices under which we have been operating have gone never to return, a change similar in character to the passing of the old bonanza days of mining and metals; new conditions in our industry call for the exercise of strictly economical operations in every department—where in the past we have thought in terms of dollars, the future will call for study in the expenditure of cents—and profit in the business will flow only to him who gets the proper viewpoint, employs and makes use of the best technical advice and who produces his goods at the least cost."

It is by a combined effort on the part of you as producers of gasoline and handlers of gas, and we as producers of oil and the gas, that we may reach this goal.

NEW BLAFFER HEARING

AUSTIN, Tex., Apr. 7.—Defense counsel in the "Blaffer suit" in which the State was given district court judgment for title to Harris County oil lands worth millions, conferred with Assistant Attorney General Joe Brown, ratifying an agreed statement of facts, concerning production in the area affected, to be submitted to the court. Motion for the 60 or more defendants for new trial will be heard April 30 in Travis County district court.

CHARTERED IN WEST VIRGINIA

CARLESTON, W. Va., Apr. 7.—The Upshur Oil & Gas Co. of Buckhannon, W. Va., has received a state charter. The company will develop oil and gas lands and operate coal mines, coke ovens, refineries and gasoline plants.

DUTCH-INDIAN CONCESSION

The Dutch senate has passed a bill granting the exploitation of the oil lands of Boenjoe and those around Aroe Bay to the Dutch-Indian Oil Co. in which the Royal Dutch and Shell group participates.

Filling Stations Built Entirely of Toncan Iron

TO assure protection against rust, fire and lightning, the Braden Steel & Winch Company, of Tulsa, Okla., is building filling stations entirely of Toncan Copper Mo-lyb-den-um Iron. The building shown here is the type built for the Humble Oil & Refining Company. It is Toncan Iron throughout, thus providing maximum protection.

The outstanding superiority of Toncan Copper Mo-lyb-den-um Iron has been proved in actual service and in comparative laboratory and weather tests. In every comparison made, it is shown that Toncan outlasts other metals 4 to 14 times.

The remarkable ability of Toncan Iron to defy rust and corrosion is due to the scientific combination of copper and mo-lyb-den-um with pure iron. It was developed by our expert metallurgists in America's finest metallurgical laboratory.

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In the oil fields where protection against fire, lightning, rust and corrosion are so important, Toncan Iron has unparalleled value.

Write for complete information regarding this remarkable metal.

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WORLD'S LARGEST AND MOST HIGHLY SPECIALIZED ALLOY STEEL PRODUCERS

What Happens?

When Your Machinery Starts and Stops

Much of the wear and tear on machinery comes from starting and stopping. For then the fluid film of lubrication is broken, *and unless you are using the right lubricant,* friction takes a heavy toll.

As long as the fluid film is intact, the quality of the lubricant is not so important—but when the fluid film breaks, as it does every time you start and stop a machine—the quality of the lubricant supplied to the bearings is of prime importance, if friction is to be kept from doing serious damage.

After exhaustive tests, scientists in our laboratories developed Humble Oils, which retain the proper viscosity and hold their fluid film at the operating temperatures produced by high speeds. And, in addition, Humble Oils have that all-important quality—the ability to leave a semi-plastic, adsorbed, protective film on the surface of the metal, after the fluid film is broken. This quality in Humble Oils prevents excess abrasion during periods of partial lubrication, which is specially important with bearings, like those of line shafts, countershafts and machine tools, which are started and stopped frequently and are often subjected to peak loads.

Reg. U. S. HUMBLE OIL & REFINING CO. HUMBLE OILS HOUSTON, TEXAS *Pat. Off.*

There is a Humble Oil which is specially prepared to meet every bearing need in your plant, your trucks or your automobile.

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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

Gray County

Danciger Oil & Refining Co.'s No. 1 R. E. Smith, 330 feet north and east of the SW cor. of the SW of Section 149, Block 3, I.&G.N. Survey. Hickory Oil & Gas Co.'s No. 1 J. W. Lester, 330 feet north and west of SE cor. of NW of NW of Section 1, Block 1, A.C.H.&B. Survey. Magnolia Petroleum Co.'s No. 1 W. W. Harrah, 330 feet south and east of NW cor. of NW of Section 150, Block 3, I.&G.N. Survey. Plains Drilling Co. & Ray's No. 2 A. Chapman-Davis, 990 feet north and 330 feet west of SE cor. of the A. Davis Survey No. 1. The Texas Company's No. 2 C. Thut, 1,326 feet north and 1,320 feet west of the SE cor. of Section 1, H.&G.N. Survey. Same company's No. 2 J. E. Williams, C of NW of Section 6, Block 1, A.C.H.&B. Survey.

Wheeler County

L. W. Rook's No. 1 M. Nelson, C of SW of NE of Section 5, Block 24, H.& G.N. Survey.

North Central and West Texas

Archer County

R. P. Dorian's No. 2 B. W. Finnell, 1,950 feet north and 150 feet east of SW cor. of Block 17, League 3, Denton County School Land, A-117, being 125 feet north and 150 feet east of SW cor. of Block 57, town of Holliday. Hain-McGaha and Humble Oil & Refining Co.'s No. 4 L. F. Wilson-C, 150 feet north and west of SE cor. of Lot No. 27, Wilson's Geraldine Subdivision. Fain-McGaha and Humble Oil & Refining Co.'s No. 1 L. F. Wilson-D, 150 feet south and east of NW cor. of S half of Lot No. 9, Section 99, A.T.N.C.L. Survey.

Fain-McGaha and United Producers Co.'s No. 6 L. F. Wilson-B, 447 feet south and 490 feet east of NW cor. of Lot No. 20, Wilson's Geraldine Subdivision. F. H. Gohlke and others' No. 2 W. H. Taylor, 160 feet north and 150 feet east of SW cor. of Lot No. 233, Geraldine Subdivision. Frank Hutcheson's No. 1 W. T. Hutcheson, 450 feet south and 250 feet east of NW cor. of Lot No. 1, Powers Subdivision, Section 123, A.T.N.C.L. Survey.

D. O. Johnson and others' No. 4 L. F. Wilson-A, 800 feet south and 150 feet west of the NE cor. of Lot No. 26, Wilson's Geraldine Subdivision. Bridwell & Heydrick's No. 15 Abercrombie & Taylor-A, 1,650 feet south and 150 feet east of NW cor. of SE of Section 2, S.P.R.R. Survey, A-1,281. L. T. Burns and others' No. 1 B. H. York and others, C of the east 120 acres of the north half of Section 1,583, T.E.&L. Survey. Harry Hines and others' No. 1 R. O. Andrews, 150 feet south and east of NW cor. of the north 184.5 acres of the R. O. Andrews 353.5-acre tract out of the R. R. Rainey Survey, A-354.

Panhandle Refining Co. & Burton's No. 4 W. R. Farmer-B, 1,725 feet north and 2,750 feet east of NW cor. of the J. Poitevent Survey No. 1, A-347. Paul Steed and others' No. 1 A. J. Ikard, 150 feet north and west of SE cor. of NW of Section 71, Jefferson County School Land, A-240. F. P. Rose's No. 1 J. R. Garvey, 150 feet north and east of SW cor of the east 60 acres of the north 160 acres of Section 1,856, T.E.&L. Survey. F. P. Rose and Humble Oil & Refining Co.'s No. 1 S. R. Crawford, 150 feet north and east of SW cor. of the east 50 acres of Section 12, Crawford Subdivision. Underwood Drilling Co. and others' No. 1 Martini, 150 feet south and 1,050 feet west of the NE cor. of Section 72, Block 4, Clark & Plumb Subdivision.

Brown County

Anna Belle Oil Co.'s No. 1 Roy Hickman, 3,400 feet south and 2,100 feet east of the NW cor. of the T. Benson Survey No. 783, being 1,050 feet south and 150 feet west of the NE cor. of their lease. Baker and others' No. 1 J. L. Cross, 3,700 feet north and 950 feet east of the SW cor. of the James Kinney Survey No. 624, being 150 feet south of the Jim Ned Creek and 150 feet west of the east line of their 20-acre lease. O. P. Bush and others' No. 1 J. J. Harris, 1,450 feet southeast of the northwest line and 2,550 feet southwest of the northeast line of the Osborne Dalton Survey No. 26, being 150 feet southeast of the northwest line and 150 feet northeast of the southwest line of the J. J. Harris 100-acre tract.

Clark-Buffalo Oil Co.'s No. 2 J. M. Perry, 3,400 feet south and 1,875 feet east of the NW cor. of the James Kinney Survey No. 624, being 200 feet north and 150 feet east of the SW cor. of their 46.5-acre lease. Gilman & McMurray's No. 2 R. Hickman-A, 150 feet north and east of the most southerly SE cor. of the G. T. Butler 215.68-acre tract out of the T. Benson Survey No. 783, and located on their 26-acre "A" lease out of the R. Hickman Survey. Pandem Oil Corp.'s No. 8 A. D. Hutton, 150 feet south and west of the NE cor. of the J. A. Nobles Survey, A-1,947. M. L. Richards' No. 5 A. L. Curry, 150 feet south and east of the NW cor. of the E. L. Betts Survey, A-70. Simms Oil Co.'s No. 1 G. T. Butler, 1,050 feet south and 3,350 feet east of the NW cor. of the T. Benson Survey No. 783, being 150 feet north and west of the most southerly SE cor. of their lease.

John Sindorf and others' No. 1 Hamp Byler, 1,170 feet south and 810 feet west of the NE cor. of Section 4, H.T.&B. Survey. George Wilson and others' No. 1 Mrs. U. D. & M. L. Dancey, 150 feet north and east of the SW cor. of the southeast 40 acres of the west 160 acres of the F. R. Henderson Survey No. 151. R. J. Baker's No. 1 Lee Roberts, 650 feet southeast of the northwest line and 600 feet northeast of the southwest line of the Mrs. William A. Smith No. 139, being 150 feet west of the Ft. W. & R. G. Ry. and 150 feet south of the north line of the Lee Roberts tract.

J. Cunningham and others' No. 1 Mrs. O. H. Nichols, 450 feet north and 150 feet west of the SE cor. of the Mrs. O. H. Nichols 200-acre tract out of the Manual M. Flores Survey No. 614. W. T. Daniels and others' No. 1 S. M. Parks, 600 feet southeast of the northwest line and 350 feet northeast of the southwest line of the S. M. Parks 195-acre tract out of the John S. Thom Survey. H. P. Evans' No. 1 Mrs. M. E. Hale, 1,050 feet north and 150 feet east of the SW cor. of SE of the Cyrus Cummings Survey No. 607.

L. L. Robb's No. 1 J. E. McCombs, 950 feet north of the most southerly southeast line and 475 feet northeast of the most easterly southwest line of the J. E. McCombs 412-acre tract out of the R. Highsmith Survey No. 15. George Winkler's' No. 1 S. M. Black, 375 feet southwest of the northeast line and 150 feet southeast of the northwest line of the S. M. Black 120-acre tract out of Lot No. 10, Brown County School Land No. 362.

Comanche County

L. B. Fain and others' No. 1 I. P. Smith, 1,000 feet south and 288 feet east of the NW cor. of the I. P. Smith 240-acre tract out of the G.C.&S.F. Survey No. 340.

Callahan County

Kingwood Oil Co.'s No. 1 M. C. Berry, 220 feet south and 660 feet east of the NW cor. of the E half of Section 106, B.B.B.&C. Survey.

Coleman County

Humphrey Brothers, Inc.'s No. 1 W. H. Rutherford, 950 feet north and 150 feet east of the SW cor. of Section 22, Coleman County School Land No. 90.

Cooke County

W. J. Green and others' No. 1 Louise Campbell-A, 2,490 feet north and 1,170 feet west of the SE cor. of the B.B.B. &C. Survey, A-1,536.

Crane County

Great Basin Oil Co.'s No. 1 M. T. Eudaley, 2,800 feet southwest of the northeast line and 1,180 feet northwest

Now—*it's taken for granted that*

for heavy duty—the

Roller Bearings

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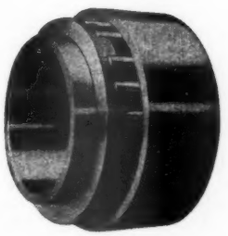

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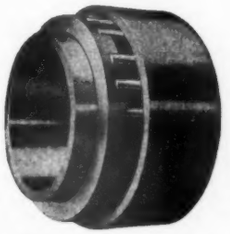

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of the southeast line of Section 36, Block 4, H.&T.C. Survey. Gulf Production Co.'s No. 4 W. N. Waddell, C of SW of SW of Section 3, Block B-25, Public School Land.

Crockett County

Grayburg Oil Co.'s No. 3 G. L. Thompson-Collins, 389 feet south and 920 feet east of NW cor. of Section 70, Block 1, I.&G.N. Survey, being 240 feet northeast of the Grayburg Oil Co.'s No. 1 H. M. Halff. Whonlick's No. 1 H. M. Halff, 150 feet north and 200 feet east of SW cor. of Section 69, Block 1, I.& G.N. Survey. F. P. Zoch's No. 1 University Land, 330 feet north and east of the SW cor. of Section 16, Block 14, University Land.

Jack County

S. H. Jackson's No. 1 B. H. Sartin, 150 feet south and 250 feet east of NW cor. of the H. B. Sartin 14.3-acre tract out of Section 17, J. J. Gholson Survey, A-229.

Montague County

R. I. Carter's No. 4 E. J. Bouldin, 725 feet north and 1,544.5 feet east of SW cor. of the C. Chacon Survey, A-140, being 114 feet south and 100 feet west of the NE cor. of his lease. Oil Operators Trust Co.'s No. 8 E. J. Bouldin 1,350 feet north and 1,150 feet east of SW cor. of the C. Chacon Survey, A-140, being 150 feet south and 521 feet west of the NE cor. of their 24.4-acre lease.

Martin County

Phillips Petroleum Co.'s No. 1 C. C. Slaughter, 330 feet north and west of SE cor. of Section 77, Bauer & Cockrell Survey.

Pecos County

George Anderson's No. 1 University Land, 2,420 feet south and west of the NE cor. of Section 11, Block 17, University Land. McMan Oil & Gas Co.'s No. 1 Mrs. M. A. Smith, 275 feet north and 330 feet east of the SW cor. of Section 104, Block 194, G.C.&S.F. Survey. Mid-Kansas Oil & Gas Co.'s No. 18 I. G. Yates-A, 811 feet south and 771 feet west of the NW cor. of Section 60, Block 1, I.&G.N. Survey, and located in the I. G. Yates Survey, A-8.195.

Throckmorton County

Humble Oil & Refining Co.'s No. 1 J. G. Parker, 473 feet north and 1,403 feet west of the SE cor. of Section 990, T.E.&L. Survey. Parker and others' No. 5 J. A. Matthews, 600 feet north and 1,000 feet east of SW cor. of Section 3, Block X, A.B.&M. Survey.

Wichita County

T. Lomax and others' No. 2 J. M. McCormick and others, 1,170 feet north and 1,464 feet west of the SE cor. of Section 6, Palo Pinto County School Land, A-241. Ruyle Farm Oil Co.'s No. 50 L. P. Ruyle, 400 feet south and 750 feet east of the NW cor. of their 102.5-acre lease out of Section 2, S.P.R.R. Survey, A-437. E. J. Stump & Co.'s No. 1 R. L. Crudup, 150 feet south and east of NW cor. of Section 10, League 4, Denton County School Land, A-417. R. I. Carter's No. 1 J. R. Pace, 150 feet north and east of the SW cor. of the west 40 acres of the south 80 acres of the north 147.5 acres of the J. R. Pace 347-acre tract out of the R. J. Scott Survey, A-255.

Coleman & Coppock's No. 6 Kemp & Kempner, 1,376 feet south and 450 feet west of NE cor. of Block 82, Kemp Wichita Valley Land. Same company's No. 7 Kemp & Kempner, 1,376 feet south and 750 feet west of the NE cor. of Block 82, Kemp Wichita Valley Land. C. H. Clark and others' No. 7 W. T. Waggoner, 790 feet south and 1,100 feet west of NE cor. of Section 33, Block 4, H.&T.C. Survey.

Ramming & Saunders' No. 1 W. J. Logan and others, 150 feet north and 1,170 feet west of SE cor. of Block 21, Kemp Wichita Valley Land, being 150 feet north and east of SW cor. of their 50-acre lease. Ridgeway & Whittiker's No. 1 Kemp & Kempner, 150 feet south and 1,000 feet east of NW cor. of Block 17, Kemp Wichita Valley Lands. Ryan Petroleum Corp.'s No. 92 G. L. Nance, 1,100 feet south and 3,400 feet east of NW cor. of the Sam O. Fowler Survey, A-78.

Shappell Oil Co.'s No. 16 Kemp & Kempner-A, 531 feet south and 150 feet west of the NE cor. of Block 19, Kemp Wichita Valley Land. L. E. Trout and others' No. 1 S. I. and H. M. Munger, 150 feet south and east of NW cor. of Lot No. 3, Block 24, Kemp Wichita Valley Land. Vergate Oil Co.'s No. 5 Deep, J. A. Watkins, 1,125 feet north and 150 feet east of the SW cor. of Block 46, Kemp Wichita Valley Land.

Wilbarger County

Golding-Cochran and others' No. 3 W. T. Waggoner-D, 505 feet south and 205 feet east of NW cor. of SW of SE of Section 24, Block 4, H.&T.C. Survey. E. B. Lawson's No. 3 W. T. Waggoner-A, C of SW of SE of Section 25, Block 4, H.&T.C. Survey. The Texas Company's No. 3 W. T. Waggoner-E, 1,414 feet south and 205 feet east of NW cor. of Section 24, Block 4, H.&T.C. Survey. Waggoner Refining Co.'s No. 3 W. T. Waggoner-E, 666 feet south and 200 feet east of NW cor. of SE of NE of Section 30, Block 4, H.&T.C. Survey. Same company's No. 1 W. T. Waggoner-G, 150 feet north and west of SE cor. of NE of SW of Section 24, Block 4, H.&T.C. Survey.

Winkler County

Cranfill & Reynolds' No. 1 T. G. Hendricks-D, 990 feet south and 330 feet east of the NW cor. of Section 33, Block 26, School Land.

Young County

Allday Oil Corp. and Carter's No. 5 J. B. McKinley, 150 feet north and 682 feet west of SE cor. of Section 1,489, T.E.&L. Survey. Same company's No. 6 J. B. McKinley, 450 feet north and 682 feet west of SE cor. of Section 1,489, T.E.&L. Survey. C. Albright and others' No. 1 J. L. Anderson, 517 feet south and 150 feet west of NE cor. of Section 1,913, T.E.&L. Survey. G. B. Chandler and others' No. 1 C. Ferguson, 450 feet north and 4,750 feet west of the most southerly SE cor. of the S. Tynes Survey, A-274.

C. B. Christie and P. Steed's No. 1 G. B. Hamilton, 150 feet south and east of NW cor. of the east 50 acres of the N half of Section T.E.&L. Survey. J. C. Cunningham's No. 4 B. Hawkins, 450 feet south and west of NE cor. of Section 1,914, T.E.&L. Survey. Hawthorne & Hodgins' No. 1 H. H. Tucker, 150 feet north and 1,176 feet east of SW cor. of Section 180, T.E.&L. Survey.

Kessler & Logan's No. 1 J. W. Knox-A, C of the J. W. Knox 160-acre tract out of the B.B.B.&C. Survey, A-1,721. C. Kleiner and others' No. 4 C. W. Langston, 750 feet south and 150 feet west of NE cor. of the S half of Section 1,490, T.E.&L. Survey. Madden & Hunt's No. 2 E. W. Hunt, 750 feet north and 1,183 feet east of SW cor. of NW of Section 240, T.E.&L. Survey. T. A. Martin and others' No. 1 J. M. Smith, Midway east and west and 150 feet south of the north line of Section 634, T.E.&L. Survey.

Panhandle Refining Co. and others' No. 2 P. K. Pittman, 450 feet south of SW cor. of the J. L. Elmore Survey, A-1,421, and located in the W. Mathews Survey, A-1,484. E. R. Riggs and others' No. 3 J. B. McKinley, 750 feet north and 150 feet west of SE cor. of the west 200 acres of Section 1,489, T.E.&L. Survey. Shappell Oil Co.'s No. 4 C. W. Johnson, 450 feet north and east of SW cor. of the Edward W. Sergeant Survey, A-253. Shaw-Riggs and others' No. 1 J. B. McKinley, 150 feet north and east of SW cor. of the north 40 acres of the east 65 acres of Section 1,489, T.E.&L. Survey. Wichita Production Co.'s No. 1 W. R. Farmer, 150 feet north and east of SW cor. of the east 40 acres of the north 120 acres of the J. Anderson Survey, A-6.

C. C. Williams and others' No. 1 D. M. Spearman, 1,600 feet south and 550 feet east of NW cor. of the William Stoneham Survey, A-250. A. T. Wolf's No. 4 G. W. Dunagan-Roamer, 528 feet south and 150 feet east of NW cor. of the east 27 acres of the west 57 acres of the east 87 acres of the south 107 acres of Section 170, T.E.&L. Survey. R. B. Wolf and others' No. 1 S. R. Jeffrey, 400

Specially Designed for Oil Service

IN oil and gas fields, refineries, pump houses, and on oil pipe line systems, these Kennedy 700-lb. and 1600-lb. test Gate Valves have a wide application.

Their heavy proportions, sound, strong metal, large disc-seating surfaces, unobstructed full opening, provisions for maintaining position of seat rings, gaskets, and packing, and perfect seating of disc are some of the features that assure efficient, trouble-free operation.

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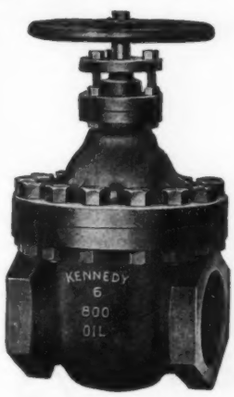

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One way you can help your dealers go after still greater gallonage is to have them use G. & B. Visibles—the only gasoline pumps on which you can get the genuine "Nultra" glass bowl that so brilliantly displays the original water-white clarity of your product that the motorist is invitingly reminded of its purity and excellence.

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For complete specifications, write for Bulletin T-176, on the wet hose sight measure type, or for Bulletin T-179, covering the mechanical measure model.

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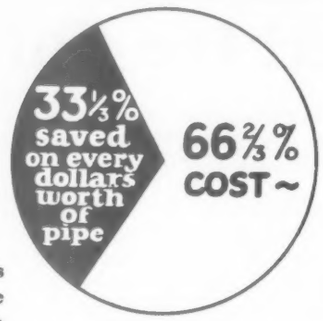
Over 1500 oil marketers are using G. & B. equipment.

The equipment dollar is the most important dollar spent by industry today. See what ODEE pipe does to the pipe-dollar.



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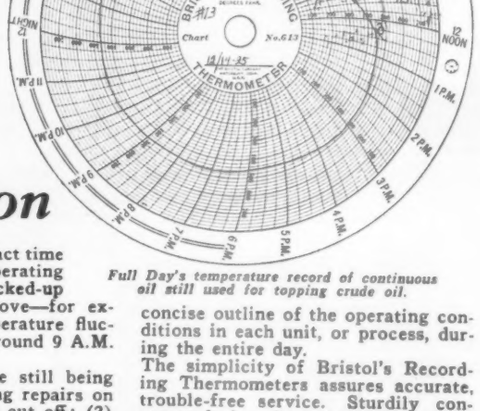
A continuous check on Oil Still Operation



Full Day's temperature record of continuous oil still used for topping crude oil.

Note how closely the exact time and extent of unusual operating conditions can be checked-up on the chart record above—for example the marked temperature fluctuation showing from around 9 A.M. to 12:30 P.M.

This was caused by the still being cut off the battery during repairs on tower. At (1) still was cut off; (2) fire was applied, and temperatures gradually increased until still was again cut back on battery at (3).

Such records are especially valuable to the management, as they give a concise outline of the operating conditions in each unit, or process, during the entire day.

The simplicity of Bristol's Recording Thermometers assures accurate, trouble-free service. Sturdily constructed they "stand the gaff" year after year, and at a maintenance cost which is remarkably low.

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feet south and east of the NW cor. of SE of Section 58, T.E.&L. Survey. Pitzer & West's No. 1 A. M. Graham estate, 800 feet south and 2,900 feet east of NW cor. of the Ben Hill Survey, A-137.

Corrected Locations

In Archer County: Sun Oil Co.'s No. 1 R. O. Andrews, 1,000 feet south and 150 feet east of NW cor. of the north 184.5 acres of the R. O. Andrew 353.3-acre tract out of the R. R. Rainey Survey, A-354.

In Carson County: Marland Oil Co.'s No. 2 S. B. Burnett-C, 450 feet south and 1,337 feet west of the NE cor. of NE of Section 105, Block 5, I.&G.N. Survey. Same company's No. 3 S. B. Burnett-C, 1,337 feet south and 450 feet west of the NE cor. of Section 105, Block 5, I.&G.N. Survey.

In Eastland County: Mook-Texas Oil Co.'s No. 1 U. Casey-B, 700 feet north and 1,220 feet east of SW cor. of the U. Casey 253-acre tract out of the W. Van Norman Survey. Same company's No. 2 U. Casey-B, 1,700 feet north and 950 feet east of SW cor. of the U. Casey 253-acre tract out of the W. Van Norman Survey.

In Montague County: Oil Operators Trust Co.'s No. 7 E. J. Bouldin, 1,350 feet north and 1,442 feet east of SW cor. of the C. Chacon Survey, A-140, being 150 feet south and 221 feet west of the NE cor. of their 24.4-acre lease.

In Young County: Wo-Mac Oil Co.'s No. 1 W. W. Farmer, 790 feet north and 150 feet east of SW cor. of the E half of Section 2, Galveston Bridge & Navigation Co. Survey, A-118.

COMMON SENSE URGED IN MARKET PROBLEMS

(Continued from Page 160)

After all is said and done, the only source of profit, to either management or investor, lies in the consuming market. Marketing is, therefore, a tremendous problem. Its variety of troubles will not be solved by the application of a cure-all, for nothing of such a nature exists in any industry. The answer will not be found in any particular method of thought or philosophy. The final answer will not be found, for the nature of all life, business or individual, is one of progress, with the end of progress always far ahead in the indefinite distance of time.

However, immediate problems can be solved, on a common sense basis, with due regard for the needs of today.

Let the individual marketer answer the first question, in some of its variations.

How about MY advertising? Is it honest? Is my product actually of the finest quality? Is it only of a quality commensurate with the price asked? Does the consumer find my product and my advertising in actual agreement? Am I laying up wrath to come by using superlatives to attract business? Can I put my public statements more within the bounds of truth? Am I acting with as much regard for personal honor in my contact with my market as I would act in everyday social contact?

Cutting Prices

Does my product reach the consumer in the manner in which I have promised to deliver it? Am I cutting prices, ruining markets, because I cannot get business by the exercise of selling ability? Am I putting up a frantic, panicky fight for existence, when a little sane thought and planning would show me another way out?

Let the individual answer, for the industry, the second question.

Is it economically sound to put hundreds of outlets into existence by use of loaned equipment? Does this equipment actually pay its way? If so, what are the actual profits? If not so, why do I and my competitors continue? Is it sound economics to expand my marketing facilities beyond the limits of the normal, logical and actual territory that my refinery can serve?

What is that territory in which I can profitably operate? What changes in national trafficways and in traffic rates are apt to occur that would damage my present setup?

What is my cost of doing business? What are my normal gross margins of profit? What constitutes a reasonable ratio of operating expenses to sales? What constitutes a reasonable investment in fixed assets to serve a community? What would be a normal gross earning for such assets?

Is my credit system functioning, as it should? Am I putting an additional burden on the industry by an improper use of credit? Do I maintain my terms, or am I engaging in competition for business on the basis of credit terms offered? How much of our capital is tied up in past due accounts?

Are my station attendants a necessary evil, to be low paid, because I do not have the ability to train them for greater production of profits, in which they can share? Am I making them an important economic factor in our national life, worthy of a place?

What else is wrong in the methods of my industry?

Fear of Competition

The individual must answer the third question.

Am I afraid of my competitor? Do I feel myself his inferior in business-getting ability? Do I want to do all the business? Am I really big enough to serve the market I now have? Do these answers indicate groping, blind hate between us, or do they show that there is no ground for anything but hard, friendly competition, that sharpens our wits and makes us respect each other—believers in co-operation in solving our mutual problems?

Can this struggle for existence be made a struggle for the right to serve?

Any individual marketer, who will take time to answer these questions will find himself too fully occupied to worry about the fourth question at this time. He will find so many things to learn, so many things to do, so much common ground upon which to meet his competitors, that the question of future competition will lose many of its threats.

There is not an individual or a board of directors, engaged in marketing, but what can put in many hours finding the answer to these questions. The answers will show the way to volume of sales with a reasonable profit, for both investor and surplus account.

It does not require ability to sell at a loss; conversely, it requires ability of a high order to sell at a profit.

The investor and consumer markets will be found responsive to constructive effort. Constructive effort is impossible in any industry without group action.

What is the answer?

OIL BOARD DEFERRING ACTION ON LEGISLATION

WASHINGTON, D. C., Apr. 7.—Secretary Work, as chairman of the Federal Oil Conservation Board, has announced that proposed legislative recommendations by the board would be deferred pending receipt of the viewpoint of the governors of the 20 oil-bearing states relative to the necessity or feasibility of uniform state legislation affecting the production of petroleum.

Secretary Work explained that the Government Oil Board has been conducting a most exhaustive inquiry into petroleum conditions of this and other countries, and that this investigation still is in progress. Two reports, he added, have been compiled by the board, and a third and final report covering a world-wide survey is nearing completion. In addition to the board's reports, the report of the Committee of Nine, representative of the Federal Government, the oil industry and the American Bar Association, made specific recommendation and these recommendations now are receiving the attention of the oil board's technologists.

In the proper interest of the public, the Government and the oil industry, the Federal Oil Conservation Board has taken the position, Secretary Work said, that it should not sponsor a definite legislative program until every possible fact relating to national and international oil production, distribution and consumption is in hand.

BUREAU OF MINES STATISTICS FOR FEBRUARY, 1928

PRODUCTION AND GRAVITY
(Barrels of 42 U. S. gallons)

	February, 1928 Total	February, 1928 Dly. Av.	January, 1928 Total	January, 1928 Dly. Av.	February, 1927 Total	February, 1927 Dly. Av.	Aver. grav.
Seminole	9,540,000	329,000	10,419,000	336,000	8,264,000	295,000	41.0
Panhandle	2,266,000	78,000	2,348,000	76,000	3,528,000	126,000	36.0
Seal Beach	1,188,000	41,000	1,288,000	42,000	444,000	16,000	24.0
Long Beach	3,436,000	118,000	3,505,000	113,000	2,607,000	93,000	26.0
West Texas	7,735,000	267,000	7,905,000	255,000	1,833,000	65,000	....

STOCKS AT SEMINOLE
(Barrels of 42 U. S. gallons)

	Feb. 29, 1928	Jan. 31, 1928	Feb. 28, 1927
Producers' stocks	414,000	410,000	.....
Tank-farm stocks	17,745,000	16,454,000	.....
Total stocks	18,159,000	16,864,000	.....

RECORD OF WELLS, FEBRUARY, 1928
(Barrels of 42 U. S. gallons)

	Completions: Oil	Gas	Dry	Total initial production	Average initial production	Drilling Feb. 29
Seminole	41	0	13	29,700	700	100
Panhandle	21	4	1	9,200	400	143
Seal Beach	2	..	..	300	150	2
Long Beach	6	..	1	10,300	1,700	163
West Texas	75	2	35	222,900	3,000	310

ANALYSIS OF SUPPLY AND DEMAND OF ALL OILS
(Including wax, coke, and asphalt in thousands of barrels of 42 U. S. gallons)

	February 1928	January 1928*	February 1927	Jan.-Feb. 1928	Jan.-Feb. 1927
NEW SUPPLY:					
Domestic production:					
Crude petroleum:					
Light	59,669	64,266	58,580	123,935	120,174
Heavy	7,983	8,055	9,024	16,038	19,175
Total crude	67,652	72,321	67,874	139,973	139,349
Natural-gas gasoline	3,279	3,367	2,933	6,646	6,078
Benzol	217	226	200	443	417
Total	71,148	75,914	71,007	147,062	145,844
Daily average	2,453	2,449	2,536	2,451	2,472
Excess of daily average domestic production over domestic demand	372	478	485	427	452
Imports:					
Crude	6,036	6,145	4,181	12,181	8,695
Refined	1,054	1,165	1,508	2,219	2,697
Total new supply all oils	78,238	83,224	76,696	161,462	157,236
Daily average	2,698	2,685	2,739	2,691	2,665
Change in stocks all oils	7,074	9,140	8,414	16,214	16,021
DEMAND:					
Total demand	71,164	74,084	68,282	145,248	141,215
Daily average	2,454	2,390	2,439	2,421	2,393
Exports:†					
Crude	1,243	1,232	1,165	2,475	2,369
Refined	9,578	11,738	9,686	21,316	19,748
Domestic demand	60,343	61,114	57,431	121,457	119,098
Daily average	2,081	1,971	2,051	2,024	2,019
STOCKS (end of month):					
Crude:					
East of California:‡					
Light	312,323	309,482	237,968	312,323	237,968
Heavy	50,640	49,410	47,490	50,640	47,490
California:					
Light	20,110	20,493	29,770	20,110	29,770
Heavy§	94,797	94,327	87,640	94,797	87,640
Total crude	477,870	473,712	402,868	477,870	402,868
Natural-gas gasoline at plants	824	740	619	824	619
Total refined	124,682	121,850	132,631	124,682	132,631
Grand total stocks all oils	603,376	596,302	536,118	603,376	536,118
Days' supply‖	246	249	229	249	224
Bunker oil (included above in domestic demand)	3,751	3,783	3,587	7,534	7,527

*Revised. Crude stocks December 31, 1927, revised by addition of 466,000 bbls. to Oklahoma-Texas light; 618,000 bbls. to Gulf Coast heavy; and 1,894,000 bbls. to California heavy. †Includes shipments to noncontiguous territories. ‡Exclusive of producers' stocks. §Includes fuel oil. ‖Grand total stocks divided by daily average demand.

NUMBER OF PRODUCING OIL WELLS COMPLETED*

February, 1928	836	January-February, 1928	1,606
January, 1928	764	January-February, 1927	2,727

*For states east of California, from The Oil and Gas Journal; for California, from the American Petroleum Institute.

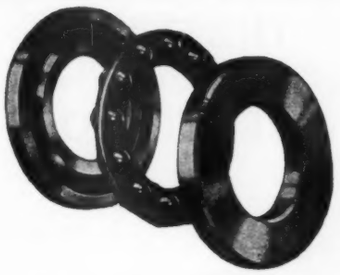
SHIPMENTS OF CALIFORNIA OIL THROUGH PANAMA CANAL TO EASTERN PORTS IN UNITED STATES (BARRELS)

	February, 1928	January, 1928	Jan.-Feb., 1928	Jan.-Feb., 1927
Crude oil	415,000	234,000	649,000	1,220,000
Refined products	1,085,000	1,471,000	2,556,000	4,819,000
Gasoline	910,000	1,072,000	1,982,000	1,850,000
Asphalt	2,000	1,000	3,000	1,000
Gas oil	93,000	311,000	404,000	728,000
Fuel oil	79,000	2,000	81,000	2,239,000
Lubricants	1,000	85,000	86,000	1,000

COMPARATIVE ANALYSES
(Thousands of barrels of 42 U. S. gallons)

	Prod.* Total	Prod.* Dy.Av.	Imports† Total	Imports† Dy.Av.	Exports‡ Total	Exports‡ Dy.Av.	Stocks End of Period	Dom. Demand Total	Dom. Demand Dy.Av.
Crude to stills:									
Feb., 1928	65,601	2,262	6,036	208	1,243	43	‡383,073	.....	....
Jan., 1928	68,193	2,200	6,145	198	1,232	40	‡379,385	.....	....
Jan.-Feb., 1928	133,794	2,225	12,181	203	2,475	41	‡383,073	.....	....
Feb., 1927	63,036	2,251	4,181	149	1,165	42	‡315,228	.....	....
Jan.-Feb., 1927	132,639	2,248	8,695	147	2,369	40	‡315,228	.....	....
Gasoline:									
Feb., 1928	26,775	923	372	13	3,341	115	38,782	21,136	729
Jan., 1928	27,879	899	562	18	3,713	120	36,112	20,939	675
Jan.-Feb., 1928	54,654	911	934	16	7,054	118	38,782	42,075	701
February, 1927	25,024	894	416	15	3,544	127	49,714	18,240	651
Jan.-Feb., 1927	52,984	898	936	16	7,101	120	49,714	36,128	612
Kerosene:									
Feb., 1928	4,783	165	11	....	1,551	54	7,692	3,221	111
Jan., 1928	5,047	163	46	1	2,350	76	7,670	2,742	88
Jan.-Feb., 1928	9,830	164	57	1	3,901	65	7,692	5,963	99
Feb., 1927	4,453	159	1	....	1,399	50	8,655	2,590	93
Jan.-Feb., 1927	9,566	162	1	....	3,016	51	8,655	6,472	110
Gas oil and fuel oil:									
Feb., 1928	30,944	1,067	666	23	3,420	118	§123,808	.....	....
Jan., 1928	32,271	1,041	553	18	4,175	135	§123,950	.....	....
Jan.-Feb., 1928	63,215	1,054	1,219	20	7,595	127	§123,808	.....	....
Feb., 1927	30,185	1,078	1,053	38	3,812	136	§109,739	.....	....
Jan.-Feb., 1927	63,121	1,070	1,713	29	7,544	128	§109,739	.....	....
Lubricants:									
Feb., 1928	2,728	94	.....	....	841	29	8,332	1,533	53
Jan., 1928	2,658	86	.....	....	934	30	7,978	1,606	52
Jan.-Feb., 1928	5,386	90	.....	....	1,775	30	8,332	3,139	52
Feb., 1927	2,345	84	.....	....	620	22	8,361	1,251	45
Jan.-Feb., 1927	4,915	83	1	....	1,484	25	8,361	2,647	45
Wax (thous. pounds):									
Feb., 1928	49,068	1,692	1,337	46	38,036	1,312	166,244	15,025	518
Jan., 1928	55,320	1,785	1,117	36	39,712	1,281	168,900	15,039	485
Jan.-Feb., 1928	104,388	1,740	2,454	41	77,748	1,296	166,244	30,064	501
Feb., 1927	47,363	1,692	2,048	73	23,623	844	198,452	20,171	720
Jan.-Feb., 1927	101,477	1,720	2,508	43	52,851	896	198,452	38,013	644

*Figures in this column for crude petroleum are runs to stills. †From Bureau of Foreign & Domestic Commerce, subject to revision. Exports include shipments to Alaska, Hawaii, and Porto Rico. ‡Includes California light crude. §Includes California heavy crude and fuel oil.



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Every gas man who has not yet considered the working principles of this efficient Regulator is urged to write for a copy of our catalog. All technical information is given together with list of prices.

We have designed this regulator to serve especially where it is desirable to maintain atmospheric pressure on a system discharging gases to a line under light pressure. It acts as a safeguard when used in the vapor lines connected to storage tanks for the recovery of gases, the purpose being to prevent the pulling of a vacuum.

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Guard Production With the Rugged Strength of Drop Forged Parts

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Champion Drop Forgings for the vital, load-bearing parts of production equipment insure steady, consistent production, freedom from breakdowns, delays and costly replacement charges. The rugged strength of Champions is inherited from the steel of which they are made.

Specify Champion Drop Forgings for all replacement parts and on all new production equipment.

THE CHAMPION MACHINE & FORGING CO.

Cleveland, Ohio

CHAMPION DROP FORGINGS

STOCKS OF CRUDE PETROLEUM HELD IN THE UNITED STATES (BARRELS)

			Feb. 29, 1928	Jan. 31, 1928	Feb. 28, 1927
AT REFINERIES (and in coastwise transit thereto). Reported by location of storage:					
East Coast:					
Domestic			8,086,000	8,569,000	7,585,000
Foreign			4,233,000	3,491,000	3,604,000
Appalachian			1,956,000	1,883,000	1,606,000
Indiana, Illinois, etc.			2,904,000	2,812,000	2,491,000
Oklahoma, Kansas, etc.			5,888,000	5,655,000	3,551,000
Texas: Inland			1,554,000	1,484,000	1,120,000
Gulf Coast:	Domestic		7,996,000	8,006,000	8,305,000
	Foreign		263,000	153,000	237,000
Arkansas and Inland Louisiana			578,000	441,000	566,000
Louisiana Gluf Coast:	Domestic		6,063,000	5,886,000	7,179,000
	Foreign		1,230,000	1,289,000	967,000
Rocky Mountain			1,610,000	1,498,000	1,504,000
Total east of California			42,361,000	41,167,000	37,709,000
ELSEWHERE THAN AT REFINERIES:					
Domestic—Reported by field of origin:					
Appalachian:					
N. Y., Pa., W. Va., Eastern and Central Ohio:		Gross	6,602,000	6,459,000	6,675,000
		Net	6,290,000	6,148,000	6,391,000
Kentucky		Gross	1,191,000	1,176,000	1,253,000
		Net	1,063,000	1,048,000	1,128,000
Lima-Indiana:		Gross	1,306,000	1,282,000	877,000
		Net	1,153,000	1,128,000	666,000
Illinois-S. W. Indiana:		Gross	12,534,000	12,616,000	12,293,000
		Net	12,039,000	12,122,000	11,808,000
Mid-Continent:					
Oklahoma; Kansas; Central. North and West Texas		Gross	241,796,000	238,149,000	165,575,000
		Net	229,269,000	225,885,000	153,248,000
Northern Louisiana and Arkansas:		Gross	28,609,000	28,435,000	31,509,000
		Net	26,995,000	25,817,000	29,011,000
Gulf Coast:		Gross	17,873,000	18,550,000	18,057,000
		Net	17,478,000	18,161,000	17,763,000
Rocky Mountain:		Gross	27,202,000	27,331,000	27,334,000
		Net	27,158,000	27,288,000	27,236,000
Total pipe line and tank farm stocks east of California:		Gross	337,113,000	333,998,000	263,573,000
		Net	320,545,000	317,597,000	247,191,000
Foreign crude petroleum on Atlantic Coast			43,000	85,000	108,000
Foreign crude petroleum on Gulf Coast			14,000	43,000	450,000
Total refinery, pipe line and tank farm stocks of domestic and foreign crude petroleum east of California			57,000	128,000	558,000
			362,963,000	358,892,000	285,458,000
CLASSIFICATION BY GRAVITY (approx.):					
East of California:					
Light crude (24 degrees and above)			312,323,000	309,482,000	237,968,000
Heavy crude (below 24 degrees)			50,640,000	49,410,000	47,490,000
CALIFORNIA:					
Light			20,110,000	20,493,000	29,770,000
Heavy (including fuel)			94,797,000	94,327,000	87,640,000

PRODUCTION OF CRUDE PETROLEUM BY FIELDS AND STATES WITH CLASSIFICATION BY GRAVITY

(Barrels of 42 U. S. gallons)

	February, 1928		January, 1928		Jan.-Feb.	Jan.-Feb.
Field—	Total	Dly. Av.	Total	Dly. Av.	1928	1927
Appalachian	2,413,000	83,200	2,398,000	77,400	4,811,000	4,646,000
Lima-Indiana	132,000	4,500	124,000	4,000	256,000	296,000
Michigan	30,000	1,000	31,000	1,000	61,000	58,000
Ill.-S. W. Ind.	591,000	20,400	580,000	18,700	1,171,000	1,257,000
Mid-Continent	41,031,000	1,414,900	44,143,000	1,423,900	85,174,000	81,035,000
Gulf Coast	3,237,000	111,600	3,626,000	117,000	6,863,000	8,918,000
Rocky Mountain	2,180,000	75,200	2,391,000	77,100	4,571,000	4,971,000
California	18,038,000	622,000	19,028,000	613,800	37,066,000	38,168,000
United States total	67,652,000	2,332,800	72,321,000	2,332,900	139,973,000	139,349,000
State—						
Arkansas	2,569,000	88,600	2,732,000	88,100	5,301,000	7,628,000
California	18,038,000	622,000	19,028,000	613,800	37,066,000	38,168,000
Colorado	229,000	7,900	219,000	7,100	448,000	454,000
Illinois	517,000	17,800	510,000	16,400	1,027,000	1,144,000
Indiana	82,000	2,800	77,000	2,500	159,000	134,000
Southwestern	74,000	2,600	70,000	2,300	144,000	113,000
Northeastern	8,000	200	7,000	200	15,000	21,000
Kansas	3,245,000	111,900	3,346,000	107,900	6,591,000	6,961,000
Kentucky	558,000	19,200	542,000	17,500	1,100,000	1,011,000
Louisiana	1,680,000	57,900	1,758,000	56,700	3,438,000	3,625,000
Gulf Coast	391,000	13,500	397,000	12,800	788,000	571,000
Rest of State	1,289,000	44,400	1,361,000	43,900	2,650,000	3,054,000
Michigan	30,000	1,000	31,000	1,000	61,000	58,000
Montana	354,000	12,200	370,000	11,900	724,000	820,000
New Mexico	66,000	2,300	79,000	2,500	145,000	267,000
New York	182,000	6,300	187,000	6,000	369,000	339,000
Ohio	563,000	19,400	560,000	18,100	1,123,000	1,172,000
Central and Eastern	439,000	15,100	443,000	14,300	882,000	897,000
Northwestern	124,000	4,300	117,000	3,800	241,000	275,000
Oklahoma	19,017,000	655,800	20,956,000	676,000	39,973,000	38,325,000
Osage County	.....	.....	1,815,000	58,500	.....	4,260,000
Rest of State	.....	.....	19,141,000	617,500	.....	34,065,000
Pennsylvania	770,000	26,600	762,000	24,600	1,532,000	1,456,000
Tennessee	4,000	100	2,000	100	6,000	9,000
Texas	17,757,000	612,300	18,977,000	612,200	36,734,000	33,414,000
Gulf Coast	2,846,000	98,100	3,229,000	104,200	6,075,000	8,347,000
Rest of State	14,911,000	514,200	15,748,000	508,000	30,659,000	25,067,000
West Virginia	460,000	15,900	462,000	14,900	922,000	934,000
Wyoming	1,531,000	52,800	1,723,000	55,600	3,254,000	3,430,000
Salt Creek	1,096,000	37,800	1,298,000	41,900	2,394,000	2,437,000
Rest of State	435,000	15,000	425,000	13,700	860,000	993,000
Classification by gravity (approx.):						
Light crude	59,669,000	2,057,500	64,266,000	2,073,100	123,935,000	120,174,000
Heavy crude	7,983,000	275,300	8,055,000	259,800	16,038,000	19,175,000

IMPORTS AND EXPORTS OF CRUDE PETROLEUM (BARRELS)

(From Bureau of Foreign & Domestic Commerce)

	February, 1928		January, 1928		Jan.-Feb.,	Jan.-Feb.,
	Total	Dly. Av.	Total	Dly. Av.	1928	1927
Imports	6,036,000	208,100	6,145,000	198,200	12,181,000	8,695,000
From Mexico	963,000	33,200	1,210,000	39,000	2,173,000	3,811,000
From Venezuela	3,574,000	123,200	3,283,000	104,900	6,857,000	3,072,000
From Colombia	1,499,000	51,700	1,141,000	36,800	2,640,000	1,424,000
From other countries	.....	.....	511,000	16,500	511,000	388,000
Exports*	1,243,000	42,900	1,226,000	39,500	2,469,000	2,369,000
Domestic crude oil:						
To Canada	998,000	34,400	865,000	27,900	1,863,000	1,852,000
To other countries	245,000	8,500	361,000	11,600	606,000	517,000
Foreign crude oil	.....	.....	.....	.....	.....	.....

*No shipments of crude to territories during February.

INDICATED DELIVERIES OF CRUDE PETROLEUM, EXCLUSIVE OF CALIFORNIA GRADES, TO DOMESTIC CONSUMERS (BARRELS)

	February, 1928		January, 1928		Jan.-Feb.,	Jan.-Feb.,
	Total	Dly. Av.	Total	Dly. Av.	1928	1927
Domestic petroleum by fields of origin:						
Appalachian	2,256,000	77,800	2,528,000	81,500	4,784,000	4,917,000
Lima-Indiana	107,000	3,700	130,000	4,200	237,000	296,000
Michigan	30,000	1,000	31,000	1,000	61,000	58,000
Ill. & S. W. Ind.	674,000	23,200	628,000	20,300	1,302,000	1,219,000
Mid-Continent	37,369,000	1,288,600	39,372,000	1,270,100	76,741,000	72,624,000
Gulf Coast	3,920,000	135,200	2,991,000	96,500	6,911,000	11,246,000
Rocky Mountain	2,310,000	79,700	2,338,000	75,400	4,648,000	5,777,000
Deliveries and exports	46,666,000	1,609,200	48,018,000	1,549,000	94,684,000	96,170,000
Deliveries	45,925,000	1,583,600	47,272,000	1,524,900	93,197,000	94,633,000
Foreign petroleum	6,107,000	210,600	6,106,000	197,000	12,213,000	8,746,000
Deliveries of domestic and foreign petroleum	52,032,000	1,794,200	53,378,000	1,721,900	105,410,000	103,379,000

RUNS TO STILLS AND OUTPUT OF REFINERIES IN THE UNITED STATES, FEBRUARY, 1928

	Crude oil—Domestic	Crude oil—Foreign	Unfinished oils	Natural-gas gasoline blended	Total Input (bbls.)
East Coast	8,355,000	3,622,000	1,193,000	212,000	13,382,000
Appalachian	2,367,000	.....	91,000	56,000	2,514,000
Indiana, Illinois, etc.	6,717,000	.....	379,000	177,000	7,273,000
Oklahoma, Kansas, etc.	7,926,000	.....	331,000	341,000	8,598,000
Texas	13,700,000	67,000	495,000	545,000	14,807,000
Louisiana and Arkansas	4,731,000	457,000	200,000	456,000	5,844,000
Rocky Mountain	1,844,000	.....	474,000	95,000	2,413,000
California	15,815,000	.....	*283,000	†945,000	17,043,000
United States total	61,455,000	4,146,000	3,446,000	2,827,000	71,874,000
Daily av., 2/28	2,119,100	143,000	118,800	97,500	2,478,400
Daily av., 1/28	2,067,800	132,000	116,600	94,800	2,411,200
Texas Gulf Coast	10,658,000	67,000	471,000	468,000	11,664,000
Louisiana Gulf Coast	3,242,000	457,000	72,000	378,000	4,149,000

	Gasoline (bbls.)	Kerosene (bbls.)	Gas oil and fuel oil (bbls.)	Lubricants (bbls.)	Wax (lbs.)
East Coast	4,035,000	778,000	6,737,000	916,000	18,130,000
Appalachian	1,140,000	263,000	496,000	357,000	6,311,000
Indiana, Illinois, etc.	3,700,000	441,000	2,073,000	297,000	6,311,000
Oklahoma, Kansas, etc.	4,185,000	781,000	2,826,000	200,000	3,575,000
Texas	5,809,000	1,250,000	5,769,000	680,000	5,908,000
Louisiana and Arkansas	1,932,000	461,000	2,365,000	46,000	5,516,000
Rocky Mountain	1,059,000	167,000	576,000	53,000	3,317,000
California	4,915,000	702,000	10,102,000	179,000	.....
United States total	26,775,000	4,783,000	30,944,000	2,728,000	49,068,000
Daily av., 2/28	923,300	164,900	1,067,000	94,100	1,692,000
Daily av., 1/28	899,000	162,800	1,041,000	85,700	1,784,500
Texas Gulf Coast	4,644,000	1,043,000	4,348,000	652,000	5,609,000
Louisiana Gulf Coast	1,502,000	409,000	1,330,000	46,000	5,516,000

	Coke (tons)	Asphalt (tons)	Other finished products (bbls.)	Unfinished products (bbls.)	Losses (bbls.)
East Coast	12,800	70,300	62,000	33,000	309,000
Appalachian	2,700	.....	39,000	68,000	113,000
Indiana, Illinois, etc.	26,100	34,900	176,000	116,000	116,000
Oklahoma, Kansas, etc.	19,000	500	36,000	75,000	375,000
Texas	22,300	13,100	5,000	506,000	596,000
Louisiana and Arkansas	10,200	40,200	141,000	490,000	120,000
Rocky Mountain	6,900	.....	12,000	524,000	25,000
California	.....	49,500	164,000	*389,000	315,000
United States total	100,000	208,500	635,000	2,201,000	1,969,000
Daily av., 2/28	3,450	7,190	21,900	75,900	67,900
Daily av., 1/28	3,320	6,420	19,770	74,100	68,650
Texas Gulf Coast	19,300	13,000	2,000	298,000	501,000
Louisiana Gulf Coast	10,000	39,100	131,000	409,000	40,000

*Includes 111,000 bbls. net tops produced. †Includes 202,000 bbls. natural-gas gasoline run through pipe lines. Note.—Wax, coke, and asphalt equivalent to 280.4 pounds per barrel and 5.14 and 5.52 barrels per ton, respectively.

GASOLINE PRODUCTION BY THE VARIOUS METHODS—FEBRUARY, 1928

(Barrels)

	Straight run	%	Cracked	%	Natural-gas gasoline	%	Total
East Coast	2,329,000	58	1,494,000	37	212,000	5	4,035,000
Appalachian	755,000	66	329,000	29	56,000	5	1,140,000
Indiana, Illinois, etc.	2,028,000	55	1,495,000	40	177,000	5	3,700,000
Oklahoma, Kansas, etc.	2,525,000	60	1,319,000	32	341,000	8	4,185,000
Texas	2,724,000	47	2,540,000	44	545,000	9	5,809,000
Louisiana and Arkansas	930,000	48	546,000	28	456,000	24	1,932,000
Rocky Mountain	536,000	51	428,000	40	95,000	9	1,059,000
California	3,430,000	70	540,000	11	*945,000	19	4,915,000
Total	15,257,000	57	8,691,000	32	2,827,000	11	26,775,000
Total January, 1928	16,043,000	57	8,896,000	32	2,940,000	11	27,879,000
Total January-February, 1928	31,300,000	57	17,587,000	32	5,767,000	11	54,654,000
Gulf Coasts	2,593,000	42	2,707,000	44	846,000	14	6,146,000

*Includes natural-gas gasoline run through pipe lines.

STOCKS HELD BY THE REFINING COMPANIES IN THE UNITED STATES, FEBRUARY 29, 1928

	Gasoline (bbls.)	Kerosene (bbls.)	Gas oil and fuel oil (bbls.)	Lubricants (bbls.)
East Coast	6,326,000	1,477,000	9,886,000	2,948,000
Appalachian	1,376,000	291,000	853,000	1,089,000
Indiana, Illinois, etc.	5,277,000	917,000	1,043,000	938,000
Oklahoma, Kansas, etc.	4,054,000	689,000	4,426,000	576,000
Texas	5,620,000	1,369,000	7,799,000	1,630,000
Louisiana and Arkansas	1,768,000	1,024,000	4,265,000	130,000
Rocky Mountain	2,143,000	379,000	739,000	152,000
California	12,218,000	1,546,000	.....	869,000
United States total	38,782,000	7,692,000	*29,011,000	8,332,000
United States total 1/31/28	36,112,000	7,670,000	*29,623,000	7,978,000
Texas Gulf Coast	4,778,000	1,268,000	6,238,000	1,565,000
Louisiana Gulf Coast	1,660,000	1,006,000	3,624,000	130,000

	Wax (lbs.)	Coke (tons)	Asphalt (tons)	Other finished products (bbls.)	Unfinished oils (bbls.)
East Coast	63,068,000	33,300	94,000	128,000	6,894,000
Appalachian	21,828,000	1,700	.....	75,000	1,136,000
Indiana, Illinois, etc.	17,371,000	37,100	28,500	597,000	3,708,000
Oklahoma, Kansas, etc.	2,652,000	55,900	1,700	102,000	2,305,000
Texas	8,304,000	89,400	9,600	14,000	9,970,000
Louisiana and Arkansas	39,911,000	63,600	35,100	74,000	2,016,000
Rocky Mountain	13,072,000	56,000	9,200	15,000	1,474,000
California	38,000	.....	52,200	292,000	†8,475,000
United States total	166,244,000	337,000	230,300	1,297,000	35,972,000
United States total 1/31/28	168,900,000	330,400	209,300	1,176,000	35,777,000
Texas Gulf Coast	8,246,000	75,700	9,600	7,000	8,568,000
Louisiana Gulf Coast	39,911,000	61,500	34,800	67,000	1,581,000

*East of California. †Includes 1,563,000 bbls. tops in storage.

NATURAL-GAS GASOLINE, FEBRUARY, 1928

The daily average production of natural-gas gasoline in February amounted to 137,700,000 gallons. This represents a daily average of 4,750,000 gallons, an increase over the previous month of 190,000 gallons. The increased daily average production is attributable to the Oklahoma-Kansas district which, despite the short month, produced more in February than in January.

Stocks of natural-gas gasoline at the plants on February 29, 1928, amounted to 34,600,000 gallons as compared with 31,077,000 gallons on hand the previous month. This is the first material increase in stocks for several months.

Blending both at plants and at refineries showed a material increase over January.

	Natural-gas gasoline—Production—Feb., 1928	Production—Jan., 1928	Production—Feb., 1927	Stocks end of month—Feb., 1928	Stocks end of month—Jan., 1928	Blended motor fuel, February, 1928—Natural gasoline used	Blended motor fuel, February, 1928—Naphtha or other oils used	Stocks end of month
(Thousand of gallons)								
Appalachian	10,300	10,600	9,900	3,828	3,919	84	147	262
Indiana, Illinois, etc.	1,300	1,300	1,500	428	285	58	1	17
Oklahoma, Kansas, etc.	51,600	*51,400	41,700	17,510	15,772	1,864	2,813	626
Texas	25,600	26,200	23,900	9,006	7,704	246	561	148
Louisiana and Arkansas	6,800	6,700	6,400	1,945	1,644	251	238	73
Rocky Mountain	3,400	3,200	3,500	490	441	....	....	129
Total east of California	99,000	*99,400	86,900	33,207	29,765	2,503	3,760	1,255
California	38,700	42,000	36,300	1,393	1,312	Not available		2
Total United States	137,700	*141,400	123,200	34,600	31,077	....	....	1,257
Daily average	4,750	4,560	4,400	.....	.....	....	....	....

*Revised.

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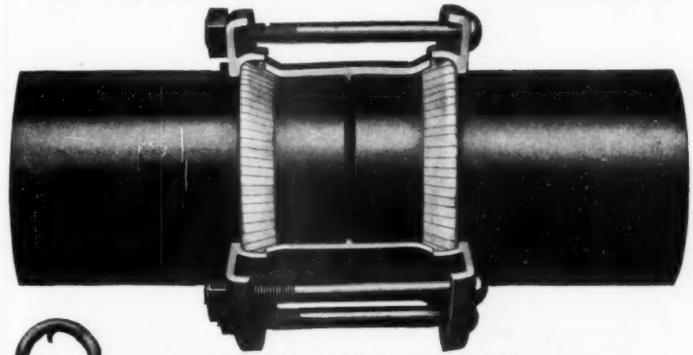

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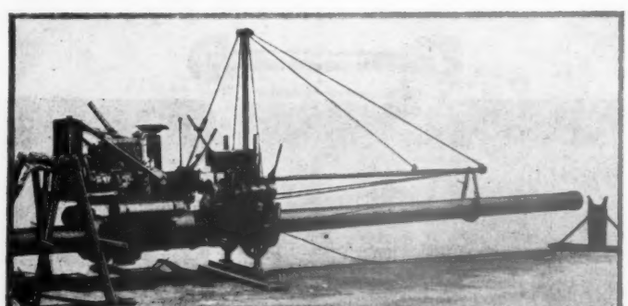

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The indicated output of motor fuel from the above and other sources may be expressed by the following table.

(Thousands of gallons)

	February, 1928	January, 1928	February, 1927
Total gasoline produced at refineries*†	1,124,600	1,170,900	1,051,000
Raw gasoline blended at plants east of California	2,500	2,300	2,200
Raw gasoline sold direct to jobbers (estimated)	2,100	2,100	1800
Benzol production§	9,100	9,500	8,400
Total motor fuel produced	1,138,300	1,184,800	1,062,500
Daily average	39,250	38,220	37,950
*Includes natural-gas gasoline blended at refineries	110,300	114,600	90,700
†Includes natural-gas gasoline run through refinery pipe lines in California	8,500	8,900	13,200

‡Under old basis.
§Estimated with production of by-product coke as a basis.

HOPE OFFERED THAT PARAFFIN TROUBLES MAY BE ELIMINATED

Paraffin troubles in the production of crude oil can be entirely eliminated or greatly reduced, it is believed, as the result of a special study recently completed by the United States Bureau of Mines. Various methods of dealing with the problem were investigated by the bureau. No one method will prove equally economical for all conditions, and the operator must consider the cost and the condition of his well before making a selection, it is pointed out.

One of the most troublesome problems in the production of crude oils that contain a high percentage of wax is the accumulation of waxy hydrocarbons, generally called paraffin, in the casing, tubing and flow lines and on the face and in the pores of the producing sands, states C. E. Reistle, Jr., in a report just made public.

Many crude oils, even those of high gravity, contain a series of waxes ranging from fractions that are liquid at ordinary temperatures to those that have high melting points. The amount of each series and the number of its individual members present vary with each crude oil. As the melting point and molecular weight increases the solubility of the wax in the crude oil decreases. The waxes of higher melting point are therefore most readily precipitated from the crude oil and are those that accumulate in the wells, flow lines, tanks and pipe lines to cause paraffin troubles.

The deposited paraffin or wax ranges from a thick paste containing considerable oil to a hard, dry wax containing little oil, depending on the circumstances and length of time of deposition. These accumulations contain variable amounts of sand, asphalt, water and fine silt, and if deposited in tanks may also contain emulsions.

The wax separates from the crude oil in crystals that usually are extremely small. As other hydrocarbons are soluble in paraffin, these crystals are not pure wax of one melting point but are mixtures of the different members of the same series and also of the liquid components of the crude. They are usually soft and cannot be readily filtered from the oil, although it is possible to remove them by centrifuging or settling. The fact that these crystals are soft and cannot readily be removed by filtering has led many erroneously to conclude that the wax suspended in or separating from the crude oil is amorphous.

In new fields where the oil contains a large quantity of wax the paraffin generally accumulates in the upper part of the casing and tubing and in the flow lines and tanks. In older fields the accumulation often extends to the bottom of the well and sometimes plugs the pores of the producing sand. The paraffin that accumulates in the casing and tubing of flowing wells tends to "choke" them and to cut down production; if not removed it will finally close the oil string completely and stop production. In pumping wells the accumulation of wax not only "chokes" the well by restricting the size of the oil passage, but the increased load often causes the rods to break if the wax is not removed at regular intervals. Paraffin accumulated in the flow line has the same effect on the well as when deposited in the oil string.

The factors that govern the amount and the character of the paraffin that will separate out of solution during the production of the crude oil are temperature of the oil, variation in the amount of volatile constituents present, and the presence of silt, sand and water. These factors can be regulated to a certain degree by methods of production which will reduce the paraffin troubles.

Numerous methods of dealing with the paraffin problem were investigated by the Bureau of Mines. Decreasing the gas-to-oil ratio and reducing the size of the oil string in flowing wells were among the methods studied. In wells flowed by compressed air or gas, controlling the flow of gas or air was a method investigated. The use of gas anchors in certain wells was also taken up. In preventing paraffin deposition in the pores or on the face of the producing sand, methods considered were those of allowing oil to accumulate in the well, pumping light fractions back into the sand, and pumping natural gasoline back into the sand. The accumulation of paraffin in flow lines and in tanks was given attention. Methods for removing paraffin deposits from casing and tubing included the use of standard tools, the use of electric hoists and paraffin hook, the use of the paraffin knife and paraffin auger. The use of solvents, such as benzol, kerosene, gasoline and natural gasoline, was also investigated. Other methods studied included the use of electric heaters in oil wells and the use of steam and chemicals.

The detailed results of this study are outlined in Bureau of Mines Technical Paper 414, "Methods of Dealing With Paraffin Troubles Encountered in Producing Crude Oil," which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a price of 15 cents.

GEOPHYSICAL ACTIVITY IN COASTAL TERRITORY

HOUSTON, Tex., Apr. 9.—Opening of new salt dome fields in the Gulf coastal territory in the past two months has resulted in renewed activity of geophysical operations and virtually all the larger companies, except possibly the Vacuum Oil Co., have one or more crews in the field in their search for additional salt domes.

A stimulus also is given this work by the strengthening of the opinion of leading oil men that all salt domes are productive of oil. Although there are several domes in this district on which prospecting has been under way for years without finding of oil, operators are tending to the theory that somewhere oil is to be found. The finding of oil in the future also is to be faciliated by increasing accuracy in the use of geophysical instruments which is expected to reduce the hazards of finding the oil to the minimum.

Although companies are running geophysical crews into all parts of the coastal territory the center of interest at present is in south Louisiana, particularly east of the Mississippi River, which district offers a wider field for development.

During the past few weeks, The Texas Company, Roxana Petroleum Corp., Humble Oil & Refining Co. and the Gulf Refining Co. all have had crews busy in Calcasieu Parish although all but Rox-

ana left without buying acreage. Roxana bought a little in Township 11s-9w.

Gulf Refining Co. has had two seismograph crews working in LaFourche Parish, as has the Louisiana Land & Exploration Co. The latter also has been active around the Wine Island prospect in Terrebonne Parish in the extreme southeastern part of the State.

Sun Oil Co. is doing some shooting in Livingston Parish around Lake Maurepais. Humble also has a crew in this parish. Humble has another crew in St. Martin's Parish shooting in Township 11s-10w. Roxana is working on the Bayou Chene prospect. Gulf Refining Co. has two torsion balance crews outlining the Napoleonville Dome and also two crews on the Chacahoula Dome. The latter is in LaFourche Parish.

In Southeast Texas, Gulf Production Co. and Roxana Petroleum Corp. are shooting in the Needville area of Fort Bend County. The Texas Company, which has had a crew in the Chenango area of Brazoria County, has finished there and moved to Louisiana. North American Exploration Co. also has been doing some shooting in Brazoria County, particularly in the Flag Pond area.

AUTOMOBILE INCREASING JAPAN'S USE OF OIL

The market price of crude petroleum in Japan is yearly declining, according to the Japan Financial and Economic Monthly. Only the Petroleum Mining Co., Asahi Petroleum Co. and a few others are now engaged in producing and selling crude oil, and operating with great difficulty. All existing concerns have sustained losses for a long time, so they will have to effect radical readjustment.

The increase in the demand for crude oil in Japan has been especially remarkable in recent years, reflecting the increasing popularity of automobiles. Production, on the other hand, has shown no tendency to advance. The declining prices are attributed chiefly to the greater pressure of competition from foreign oils. Production by the Nippon Oil Co. appears to have increased since the spring of 1926, when deeper drilling was commenced, but this gain is more than offset by the declines of other companies.

Imports have increased enormously, particularly since 1921, as evident from a study of the following table, showing the indicated consumption during recent years (the koku is equivalent to 47.66 gallons):

INDICATED JAPANESE CONSUMPTION OF CRUDE OIL

Year—	Imports 1,000 koku	Domestic production 1,000 koku	Total 1,000 koku
1917	64	2,538	2,602
1918	26	2,155	2,181
1919	50	1,995	2,045
1920	83	1,956	2,039
1921	224	1,961	2,185
1922	473	1,809	2,282
1923	990	1,567	2,557
1924	1,637	1,579	3,216
1925	2,163	1,637	3,800
1926	2,476	1,560	4,036

The tremendous increase in the imports of crude, of course, is explained by the considerably lower price of the imported oil.

MEXICAN DRILLING PERMITS

MEXICO CITY, Mexico, Apr. 6—(By Trens Agency).—The following drilling permits in Mexican fields were issued by the Department of Industry, Commerce and Labor from March 26 to 29, inclusive: Francisco Maza and Ettienne de Maza: Maza 2, Potrero de la Isleta, Panuco, Vera Cruz. Teodoro M. Moreno: T.M.M. 1, Paciencia y Aguacate, Panuco, Vera Cruz. Imperio: Cacalilao 237, Cacalilao, Panuco, Vera Cruz. New Mexican Oil: New Mexican Oil 3, San Miguel Tres Aguas, Tantima, Vera Cruz. Southern Fuel & Refining Co.: Cacalilao 238, Cacalilao, Panuco, Vera Cruz. Gulf Coast Corp.: Cacalilao 239, Cacalilao, Panuco, Vera Cruz. El Aguila: Filisola 120 and 121, Filisola, Minatitlan, Vera Cruz.

GULF COAST SHIPMENTS DECREASED IN FEBRUARY FROM JANUARY TOTAL

HOUSTON, Tex., Apr. 7.—A total of 16,484,836.83 bbls. of crude and refined products was shipped from Gulf Coast ports during February, according to figures just announced here. This, however, represented a decrease of 1,253,273.94 bbls. from water shipments of the previous month. A decrease was shown both in refined products and in crude.

Of the total February shipments, 10,158,088.10 bbls. consisted of refined products as against 6,326,748.73 bbls. of crude. And, as usual, the big bulk of the shipments were for coastwise movement rather than export, only 2,553,435.97 bbls. being shipped export during February. However, a slight increase was shown in export movement during the latter month, as these shipments during January were only 2,263,887.44 bbls.

The decline in water shipments during February does not represent an unnatural slackening of business as that month always is the slowest month of the year. This is due not only to the fact that the month is the shortest but also to the fact that the demand for refined products is sensonably light.

During the latter part of February, and a situation which has existed so far this month, the movement of refined products increased and with substantial export orders being filled this month, a material increase in water shipments probably will be reported for this month.

Water shipments during February were:

(All figures in barrels of 42 gallons)

Company and Port—	Coastwise Refined— January	Coastwise Refined— February	Export Refined— January	Export Refined— February
Standard of Louisiana, Baton Rouge	857,314.00	610,681.00	387,430.00	853,407.00
The Texas Company, Port Arthur	1,326,530.00	1,328,467.00	318,037.00	472,705.00
Gulf Refining Co., Port Arthur	2,479,098.38	2,228,290.52	201,243.63	202,915.19
Magnolia Petroleum Co., Beaumont	1,356,230.23	1,041,198.52	*.....	.....
Sinclair Refining Co., Houston	404,533.10	330,670.03	62,682.38	13,185.00
Humble Oil & Ref. Co., Baytown	1,893,147.05	1,666,248.82	1,241,346.43	947,257.78
Marland Oil Co., Texas City	.....	.....	†.....	.....
Atlantic Oil Prod. Co., Atreco	77,560.75	244,682.23	.....	.....
Deepwater Oil Refineries, Houston	10,000.00	.....	.....	10,000.00
Pure Oil Company, Smiths Bluff	362,571.11	288,380.01	.....	.....
Crown Central Pet. Corp., Houston	54,087.35	20,000.00	.....	.....
Total	8,831,071.97	7,658,618.13	2,210,739.44	2,499,469.97

Company and Port—	Coastwise Crude— January	Coastwise Crude— February	Export Crude— January	Export Crude— February
Standard of Louisiana, Baton Rouge	656,482.00	554,427.00	53,148.00	53,966.00
Magnolia Petroleum Co., Beaumont	672,832.52	672,148.50	*.....	.....
Sinclair Refining Co., Houston	447,077.84	397,688.98	.....	.....
Humble Oil & Ref. Co.:				
Texas City	1,016,136.00	785,055.00	.....	.....
Baytown	318,215.00	347,844.00	.....	.....
Ingleside	1,389,624.00	1,309,993.00	.....	.....
Neches	59,238.00	.....	.....	.....
Atlantic Oil Prod. Co.:				
Atreco	436,736.04	552,459.20	.....	.....
Beaumont	315,711.69	371,176.57	.....	.....
Swiftmire Petroleum Co., Texas City	313,882.61	241,551.92	.....	.....
Pure Oil Co., Smiths Bluff	511,678.76	337,851.56	.....	.....
Sun Oil Co., Sabine Pass	458,165.00	701,987.00	.....	.....
Crown Central Pet. Corp., Houston	47,272.00	.....	.....	.....
Totals	6,643,151.36	6,272,782.73	53,148.00	53,966.00

*Magnolia Petroleum Co. makes no distinction in reports between coastwise and export shipments. †No report.

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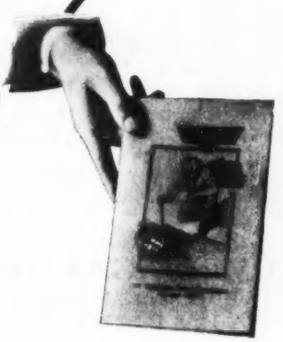

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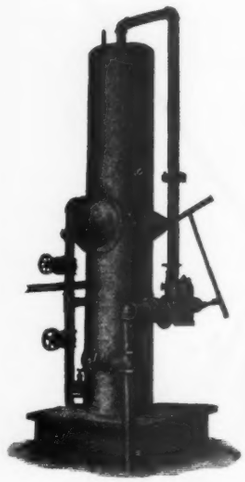

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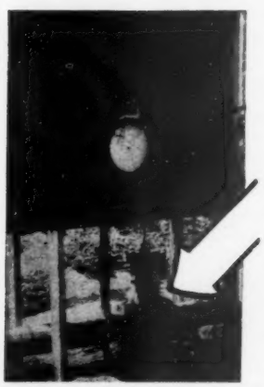

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ROBINSON ORIFICE FITTING

DISPOSAL OF SALT WATER AND WASTE SOLVED IN THE LOUISIANA FIELDS

By D. H. Bancroft

SHREVEPORT, La., Apr. 7. — Disposition of salt water and other waste from an oil field has ever been a vexing problem to the operator, particularly in cases where the field is drained by streams which had, up to the discovery of oil, been the favorite playground of the fisherman and an active conservation department is looking after the welfare of the piscatorial population of said streams—as the case has been in Louisiana. It was long thought that admission of salt water into these streams was the immediate and instantaneous cause of high mortality among the said population. To have told the natives and the departments that it wasn't, was like talking to the wind—a waste of breath. But since the Louisiana-Arkansas division of the Mid-Continent Oil & Gas Association and the Louisiana Department of Conservation began a joint study of the problem much knowledge concerning the effect of salt water, waste oil and other waste products from oil development on fish life has been garnered and has resulted in the evolution of a system of handling this waste to the mutual satisfaction of the oil field afflicted with fish trouble (not necessarily in the wells themselves) as illustrated in the accompanying sketch prepared by Percy Viosca, Jr., director of fisheries of the Louisiana Conservation Department, the results of whose studies of the problem are summed up in the following excerpts from a paper on "Water Pollution in Louisiana."

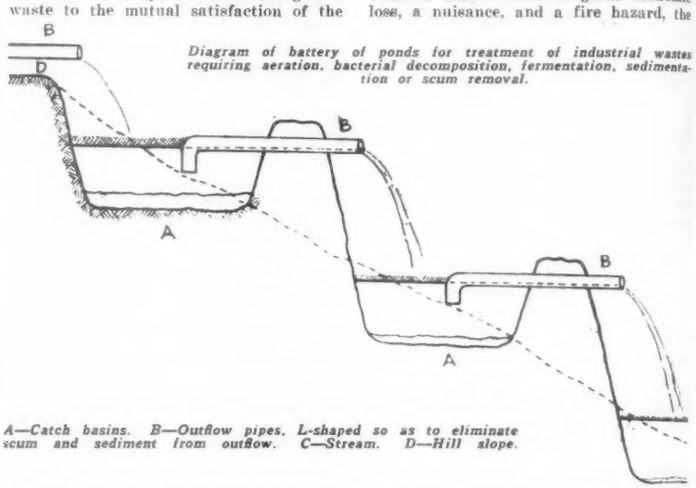

Diagram of battery of ponds for treatment of industrial wastes requiring aeration, bacterial decomposition, fermentation, sedimentation or scum removal.

A—Catch basins. B—Outflow pipes, L-shaped so as to eliminate scum and sediment from outflow. C—Stream. D—Hill slope.

Diagrammatic sectional view of ponds suitable for removal of scums and sediments from industrial wastes: The hill slope is greatly exaggerated beyond that required and the catch basins are not drawn to scale. For efficient treatment of most waters, each basin should be at least large enough to carry the effluent discharged in 24 hours. In using such a system of reservoirs for the settling of wastes from oil fields, the L neck can be eliminated, provided an oil trap is installed in the last pond or a combined pickup station serving several treating plants can be established further down hill.

Pollution and Solution

"In our great producing oil fields, especially in the northern part of the State, pollution of streams is sometimes very troublesome," said Mr. Viosca. "Accidental oil wastes, escaping from makeshift reservoirs and oil traps which become especially inefficient during heavy rainfall, and large volumes of salt water associated with the oil, are constantly getting into our upland streams, lakes, bayous or rivers as the case may be.

"Our greatest troubles from the oil itself come with the opening of a new field. With the building of more efficient reservoirs and oil traps, the oil is brought under more satisfactory control as a field becomes older. While a great economic loss, a nuisance, and a fire hazard, the State, the oil operator, the fisherman, and, undoubtedly, the fish. As to this last, however, there is still some room for doubt as the fish, being saved from death by pickling in brine or suffocation under scum or an incrustation of flocculent iron oxide, become an easier prey to the fisherman; particularly the sportsman who hunts with nets or a stick of dynamite.

Problem Adjusted

The Louisiana-Arkansas division of the Mid-Continent Association and the State Department of Conservation first locked horns and later got together on this problem soon after the intensive development of Cotton Valley began. For a time hostilities were imminent and innumerable court suits hovered over the operators at the instance of hostile citizens, but a sincere desire and willingness of both operators and state officials and calmer judgment on the part of influential citizens prevailed and matters were amicably settled, only to bob up again last year from LaSalle Parish, Louisiana, where waste from the Urania and Little Creek districts was the source of trouble.

Things here went so far as the arrest of employes of several operators in that district and presentation of the cases in court, where they have rested until their present settlement by adoption of the system worked out by the Division of Fisheries of the Louisiana Conservation Department, the Mid-Continent Association and LaSalle Parish authorities. It is a system cheap and easy of construction and adaptable to practically every crude oil itself is not as toxic to fish life as is popularly believed. It is a great factor in reducing the oxygen supply in the water by preventing diffusion from the atmosphere, and it is detrimental also to other wild life, particularly birds, since it gums up their feathers and prevents flight.

"Associated with the mineral oil coming from the wells is the other and more serious menace than the oil itself, namely the salt water and the iron compounds and other minerals in solution therein ('iron compounds' here refers to iron oxide much used in North Louisiana and Arkansas where heavier drilling fluid than the mud available can provide is required). Where the streams are relatively small, especially during drouth periods, they literally become 'aquatic deserts' devoid of all active forms of life. This condition seems to be due to two causes. First, there is in the stream water a concentration of salts which drives fresh water life away even when it is not killed outright. These salts, at the wells analyzed, average about 6 per cent sodium chloride and six-tenths of 1 per cent calcium chloride, with smaller quantities of other minerals. These are rapidly diluted during wet weather but during drouths reach certain streams in serious concentrations.

Iron Deposit

"Perhaps more serious than the salt, however, is the formation upon exposure to air, of a rusty colored iron deposit composed largely of iron carbonate and

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iron oxide. There seems to be a considerable amount of iron in solution in the well water, probably as organic iron salts, as well as some aluminum. This requires a considerable amount of oxygen, the iron settling out as soon as its oxygen requirements are satisfied and the aluminum remaining in solution. This seems to affect the fish in two ways, by taking up the oxygen supply in the stream water thus smothering the fish, especially during hot weather when the dissolved oxygen is already low, and by the flocculent deposit accumulating on the gills of fish and other aquatic creatures, further hindering their breathing. As the age of an oil field advances, the proportion of salt water to oil increases, and we have proportionately greater ill effects upon the life of our streams from the causes just mentioned.

"As to remedies for this last evil, only one suggests itself, viz: A checking of the polluting materials at the source, by means of a battery of shallow reservoirs, properly equipped with oil separators. In shallow reservoirs the reddish deposit settles out upon oxidation which is facilitated by cooling. This is best accomplished if the water, before entering the reservoirs, is allowed to fall through the air in a spray, or run through a trough or ditch with obstructions or over corrugated iron so that ripples or falls are produced. Combined settling ponds and oil separators can be made by having L-shaped outflow pipes (see figure attached), the long arm of the L being horizontal and serving as the spillway, while the short arm is placed vertically and dipping into the water to about half the depth of the pond so that neither floating oil nor iron oxide sediment is carried over.

Cheap Insurance

"Complete oxidation, and a stable condition of the minerals is reached in three or four of these ponds, but subsequent dilution only can take care of the salt concentration. In addition there are many convenient hollow or swampy places in most oil fields where the salt water can partly be impounded during very severe dry spells. The amount of oil recovered in a new field would pay for the installation in a short time and the reservoirs would thus become a cheap insurance against serious loss through accident or otherwise. The flushing of these reservoirs should work in proportion to rainfall, the greater amount of salt water being carried into the streams at a time when there is much fresh water flowing rather than in a continuous uniform flow as at present."

The system described by Mr. Viosca has been adopted for installation in the Urania district and in future oil fields in the State, and, it is understood, is also to be placed in existing fields where conditions it is designed to remedy prevail, replacing such other installations as may be already in place. It is more or less an elaboration of a system already in vogue there where salt water carrying iron oxide and even drilling fluid containing iron oxide is run through a single vat and the oxide is settled out before the waste is turned into natural drainage. It was adopted a couple of years ago in lieu of huge pits or artificial lakes at first proposed for impounding salt water during time of drought or low water, to be released into natural drainage during the rainy season, which suggestion was vigorously opposed by the operators and the Mid-Continent as being not only burdensomely expensively but impracticable.

BIG SAVING IN CRUDE BY MODERN CONSERVATION

James H. Westcott in his recently published book, "Oil—Its Conservation and Waste," devotes a chapter to conservation of crude oil which brings out some very interesting and startling facts.

"Prior to 1912," Mr. Westcott writes, "it became apparent to the leaders of the oil industry that any improvements that could be made in refining processes and apparatus and in the prevention of evaporation losses, would not provide sufficient gasoline to meet the increasing

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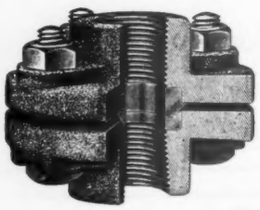

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demands; and that a large amount of gasoline must therefore be recovered from natural gas, or the heavier products of crude oil must be converted or cracked into lighter fractions. Cracking had been done to a certain extent in the production of kerosene but it could be accomplished only to a very slight extent by refineries operating at atmospheric pressure.

"After many experiments and the expenditure of a large amount of money the conversion of these heavier particles into lighter ones, or the gasoline fractions, was finally effected through the use of increased temperatures at much higher pressures. Cracking has become the outstanding factor in supplementing the production of gasoline in order that the ever-increasing demand could be met at a reasonable price.

"Upon four things, then, depended the production of sufficient gasoline to supply our national and the international needs:

"Increased refinery efficiency;

"Prevention or reduction of the former evaporation losses of the light fractions of crude oil, comprising gasoline;

"Additional production of natural or casinghead gasoline, and

"Cracking."

Then Mr. Westcott presents a number of tables which show in detail the amount of crude oil it would have required to supply the increasing gasoline requirements had the industry continued on the basis of 1914 when the gasoline recovery was 17.1 per cent; and the number of barrels of crude oil conserved daily and annually by reason of increased refinery efficiency, reduction of evaporation losses, cracking and the manufacture of casinghead gasoline.

The first table covering the years 1916 to 1927, both inclusive, shows that the conservation of crude oil effected through increased refinery efficiency and reduction of evaporation losses was 2,098,200,000 bbls.; through cracking processes 2,532,200,000 bbls. and through the recovery of natural gasoline from natural gas 1,136,200,000 bbls. a grand total of 5,766,600,000 bbls., or a daily average of 1,315,700 bbls. over a period of 12 years. The saving of oil in volume, is 85.8 per cent of the actual total production of the United States and 58.9 per cent of the actual total production of the world in the same 12-year period.

"The importance of the conservation shown is difficult to comprehend from the figures alone," Mr. Westcott writes. "But when it is realized that during the past 12 years the conservation effected in the United States has been greater than its entire production up to 1921; that is was over 62 per cent of the entire world's production up to that year; that such conservation alone was 54 per cent more than the total crude oil production of the United States in 1922-26 inclusive, and 8 per cent more than the world's production for that period and that nearly one-half of this conservation has been effected within the past three years, not only the importance of the progress of the oil industry during the past few years, but its absolute necessity, becomes apparent."

Mr. Westcott presents another table showing the number of barrels of crude oil necessary to have been refined in order to have produced the gasoline made by cracking and in natural gasoline plants, based on the percentage of the refinery recovery of gasoline from crude in each of the years from 1914 to 1927 both inclusive, and here again he shows some staggering figures, the total running up to 2,749,271,000 bbls.

A third table shows how helpless the oil business would have been to meet gasoline demand in recent years had it not been for the manufacturing progress made by the refining branch of the industry; the conservation of the lighter fractions of crude by means of vapor-tight tanks, and the progress of the natural gasoline industry.

Mr. Westcott sets forth, for example, that in 1927, had the oil industry been functioning as it was in 1914 it would have required a daily average production of 3,889,500 bbls. (1,419,667,500 bbls. per year) to have supplied refinery requirements. The actual number of bar-

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The undersigned as Receivers of the American Refining Company, Inc., will offer for sale and sell all of the assets of the American Refining Company, Inc., at public auction at the Court House door of Wichita County, Texas, at Wichita Falls, Texas, on the 5th day of May, A. D. 1928, beginning at 10:00 A. M. on said date.

Said properties consist of producing leases or royalties, real estate, a refinery of 6,000 barrels capacity, skimming plant, four Units Dubbs cracking system, two Units Cross cracking system, three hundred and forty-one tank cars, system of filling stations, stocks of merchandise, bonds, notes, stocks in pipe line companies owned by the American Refining Company, Inc., all accounts receivable, choses in action, cash on hand, a full and complete schedule of which is on file at the Receivers office in room 513 City National Bank Building, Wichita Falls, Texas, and any prospective purchaser is at liberty to inspect said schedule of assets. The sale will be conducted at public auction and will be for cash, except as to real estate and producing leases, which real estate and producing leases may be sold on part credit, provided fifty percent of the purchase price thereof be paid in cash, and twenty-five percent one year after date and twenty-five percent in two years, the deferred payments to bear six percent interest per annum with a lien upon said property to secure same. Said sale will be subject to confirmation and approval of the court and five percent of the successful bid must be deposited with the Receivers on the date of sale.

Witness our hands this the 21 day of March, A. D. 1928.

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rels consumed by the refiners was 2,279,100 bbls. a day in 1927 but it would have required 1,610,400 bbls. a day in addition to have produced the straight-run gasoline equal to that produced by cracking and natural gasoline plants. The total of crude consumed plus that so conserved was 158.1 of the production of the United States and 113.8 of the production of the world.

Mr. Westcott's book is brimful of information not only to the interested outsider but to the man actually engaged in the oil business in any of its branches. He devotes considerable space to cracking processes and a review of the litigation growing out of cracking patents. The reduction of evaporation losses and the progress of the natural gasoline industry come in for careful review, and the writer has succeeded in giving a comprehensive, if brief, review of other practical conservation methods recently introduced.

In the course of his concluding remarks Mr. Westcott says, "The trouble with the oil industry during the past few years is that it has become too efficient for its own welfare and that of its stockholders, and that neither of them has yet begun to reap the benefits of its progress along all lines."

Mr. Westcott's book is dedicated to Daniel J. Danker, of Brookline, Mass., "who has given so freely of his profound knowledge of the broad aspects and conditions of the oil industry in its preparation."

Beacon Publishing Co., 25 Broad Street, New York, are the publishers.

KENTUCKY-TENNESSEE

(Continued from Page 60)

the price of acreage in that vicinity which is about 3½ miles southwest of Whitesville.

Bert Thompson's test on the J. R. Purcell 125 acres, between Philpot and Knottsville, is a duster.

Buckner-Larue Oil Co.'s No. 1 on the Trodgen farm, in the Hayden Pool, near Andersonville, is rated good for an initial production of 125 bbls. or better, according to its showing.

Conrad Kipp and others' Nos. 4 and 5 on the Mattingley heirs 100 acres are rated at 5 bbls. each, while No. 6 is said to show for 50 bbls. or better.

Hancock County

Two dry holes were reported from the Pellville Field, in Hancock County. One of these wells was drilled by unknown parties on the Jenkins heirs farm, 2 miles north of Pellville, and the other was by Kipp and others on the James McBride farm, 1½ miles north of Pellville.

Warren County

West of Bowling Green, in Warren County, Baker & Kitchen's No. 16 in the northeast corner of the Lloyd Crowe farm, pumped but 1 bbl. initial at a depth of 500 feet.

Field Notes

The test on the old Charley Birk farm of 80 acres, now owned by Dr. T. B. Saunders and containing with other acreage a block of 2,200 acres, being drilled by the Bartellette-Meany Development Co. of Pittsburgh, Pa., is reported below a depth of 700 feet. This block is in the east side of Daviess County, near the Hancock County line, and is being closely watched by operators and scouts.

Henry and others, drilling a well on the LaMar property, the closest well to be started in the vicinity of Hawesville, in Hancock County, struck a boulder and had to move the outfit to another location.

There being a little excitement over the last well drilled on the Mattingley heirs farm in Daviess County, unknown parties are said to have bargained with E. J. Boyle for his farm adjoining the Mattingly and agreed to start development at once.

The No. 5 Mattingley heirs farm, in Daviess County, although a small well, was drilled to the lower Barlow sand, but found that dry and then filled up to the bottom of the Jett sand and was put on the pump in that formation from which the other wells on the lease get the oil.

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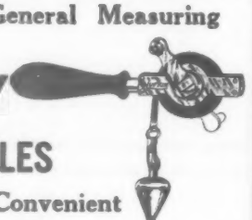
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Co., on the Dock Baird farm, 10 miles out of Owensboro on the Hartford road, struck sand at 1,356 feet, found 20 feet of sand and will be given a shot. This farm is known as the old Kopp farm and formerly was a training farm for John Kopp's race horses. This test is in wildcat territory and having a showing of oil, may develop into a commercial producer.

The test being drilled by the Eastern Gulf Oil Co. is in the sand, but not at a depth to reach the pay. This test is on the William Murray farm.

The test of Young and Murray on the Lloyd Leachman farm in McLean County struck top of sand at 1,595 feet and had got 5 feet into the sand, with a slight showing and is going deeper. This is the deepest in which the sand has been found in that section.

Miller & Damron's well on the Leet farm in the Brown Pool, in Daviess County, adjoining the Jim Brown farm, is reported making a good showing. This is northwest of the town of Utica. The Tyler well of the same firm, an offset to the Hayden lease, near Andersonville, same county, is also making a good showing.

The Trico Oil Co.'s No. 5 on the Gilbert Jolly farm, a couple of miles west of Buford and in the western part of Ohio County, is making a good showing.

Cumberland Petroleum Co.'s test in Daviess County, near the Hayden well, is due to reach the sand, being close to the sand level in that part of the county.

P. A. Rowe and others found the Jett sand dry in a test on the W. H. Smeathers well in the eastern part of Daviess County, not far from the Hancock County line.

LEGAL

NOTICE OF SALE OF STATE ROYALTY OIL

Notice is hereby given that the Board of Land Commissioners of the State of Wyoming will receive and consider sealed bids or proposals for the purchase of royalty oil, natural gas, casinghead gasoline and natural gasoline derived from leases upon State lands located in the following Oil and Gas fields in the State of Wyoming, to-wit:

Osage Elk Basin Ferris Mahoney Dome Big Muddy Rock Creek Grass Creek

subject to the following conditions:

1. All bids or proposals must be received at the Office of the Commissioner of Public Lands, Capitol Building, Cheyenne, Wyoming, on or before ten o'clock A.M., Monday, April 16th, 1928.
2. The royalties offered for sale have been appraised to sell for not less than the posted field price for oil of like kind and quality and the prevailing field price for natural gas, casinghead gasoline, and natural gasoline. Therefore, no bids or proposals will be considered for less than the field price for each product of like kind and quality.
3. All bids or proposals must be accompanied by a filing fee of $1.00; also a certified check payable to the Commissioner of Public Lands for $5,000.00 for each field covered in the bid or proposal, as a guarantee that should the bid or proposal be accepted by the Board of Land Commissioners the terms thereof will be fulfilled by the bidder.
4. Bids or proposals may cover the entire output in all of the fields, or may be submitted separately, or covering the output from one or more leases, covering the output in one field, or more than one field.
5. All oil must be refined in the State of Wyoming.
6. Bids or proposals will be considered for a period of one, three, and five years.
7. The successful bidder will be required to furnish a surety bond, in the amount fixed by the Board of Land Commissioners, guaranteeing the performance of the contract.
8. Each bid or proposal must be distinctly marked "Bid for Royalty Oil."
9. Sworn financial statements of all bidders must accompany such bids. All associations, or individuals not incorporated, must furnish a sworn statement listing the individuals interested in the bids.
10. The Board reserves the right to reject any or all bids or proposals offered for said royalties.
11. The new contract covering Big Muddy Field will not become effective until August 9, 1928.

Statements showing the production and gravity from each field for the last five years may be secured from the Commissioner of Public Lands.

In Witness Whereof, We have hereunto set our hands and caused to be affixed the seal of the Board this 8th day of March, A. D. 1928.

(SEAL)

ATTEST:

C. M. COX,
Commissioner of Public Lands, Secretary.
FRANK C. EMERSON,
President, Board of Land Commissioners of the State of Wyoming.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for February

	Month (bbls.)	Dy.av. (bbls.)
Prairie P. L. Co.*	4,147,000	143,000
Gulf P. L. Co.	1,147,334	39,584
Texas P. L. Co.	1,162,360	40,081
Magnolia Pet. Co.	2,037,671	70,265
Empire P. L. Co.	812,524	28,018
Cosden P. L. Co.	945,023	32,587
Shell P. L. Corp.	2,242,983	77,344
Sinclair P. L. Co.	2,320,000	80,000
Oklahoma P. L. Co.	2,866,753	98,854
Other lines	4,872,000	168,000
Total February	22,554,253	777,733
Total January	24,485,369	789,850
Difference	1,931,116	12,117

Shipments

Prairie P. L. Co.†	5,006,573	172,640
Gulf Pipe Line Co.	1,251,234	43,145
Texas Pipe Line Co.	1,079,832	37,236
Magnolia Pet. Co.	1,874,678	64,644
Empire Pipe Line Co.	884,780	30,510
Shell P. L. Corp.	2,232,677	76,988
Cosden P. L. Co.	743,003	25,621
Sinclair P. L. Co.†	2,508,161	86,488
Oklahoma P. L. Co.	2,741,401	94,531
Other lines	5,220,000	180,000
Total February	23,542,339	811,003
Total January	25,427,215	820,233
Difference	1,884,876	9,230

Stocks

Prairie Oil & Gas Co.*	33,500,000
Prairie Pipe Line Co.*	2,500,000
Gulf Pipe Line and Gypsy Oil Co.	10,219,658
The Texas Company	6,581,336
Magnolia Petroleum Co.	7,598,406
Empire Pipe Line Co.	4,262,149
Cosden Pipe Line Co.	2,632,367
Sinclair Crude Oil Pur Co.*	20,000,000
Oklahoma P. L. Co.	3,055,309
Carter Oil Co.	14,774,244
Other lines*	11,810,000
Total February	117,934,469
Total January	116,976,705
Difference	957,764

*Estimated. †Prairie Pipe Line shipments include Texas crude and Sinclair Pipe Line shipments include Wyoming and Texas crude.

Note—Stocks do not include approximately 7,500,000 bbls. of crude oil held in storage on private tank farms and leases and approximately 1,400,000 bbls. of Texas Panhandle crude in storage in Oklahoma and Kansas.

EASTERN PIPE LINES
Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan.'28	Feb.'28
Nat. Transit	150,803.87	150,792.56
S. W. Pa. P. L.	86,787.96	86,300.70
Eureka P. L.	361,589.34	358,514.02
Buckeye P. L. (Macksburg)	342,901.40	336,290.14
Buckeye P. L. (Cleveland)	10,402.53	10,650.78
Buckeye P. L. (Lima, etc.)	102,753.20	108,503.36
Indiana P. L.	5,916.95	6,990.90
Cumberland P. L.	224,870.56	216,913.65
N. Y. Transit	21,317.31	20,961.60
Tidewater P. L.	181,415.52	179,353.35
Pure Oil	66,257.80	64,170.62
Emery P. L.	52,122.24	54,952.72
Paragon Dev.	21,188.15	46,564.77
Stoll Oil Ref.	11,710.30	12,100.29
Total	1,640,037.52	1,652,059.46
Daily avg.	52,904.44	57,002.05

Note—Indian Refining Co. also reported other receipts of 306,927.39 bbls. Paragon Refining Co. had other receipts of 171,374.16 bbls. Paragon Development had other receipts of 1,343.02 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Jan.'28	Feb.'28
Nat. Transit	469,229.36	550,710.53
S. W. Pa. P. L.	259,339.67	300,851.13
Eureka P. L.	187,006.50	93,771.88
Buckeye P. L. (Macksburg)	140,151.88	134,030.96
Buckeye P. L. (Cleveland)	1,221.53	978.44
Buckeye P. L. (Lima, etc.)	951,977.88	1,391,510.04
Indiana P. L.	1,170,000.62	1,160,002.87
Cumberland P. L.	115,509.61	127,571.67
N. Y. Transit	128,724.19	149,006.60
Northern P. L.	185,009.92	163,752.84
Tidewater P. L.	153,752.94	143,951.23
Pure Oil	68,558.07	63,494.40
Emery P. L.	55,982.54	54,814.47
Paragon Ref.	182,235.57	167,179.39
Indian Ref.	347,862.85	307,199.80
Paragon Dev.	30,658.67	45,839.18
Total	4,540,221.80	4,853,665.43
Daily av.	146,465.22	167,367.77

Gross Stocks

The gross stocks held by various pipe lines in the oil-producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of January and February:

	Jan.'28	Feb.'28
Nat. Transit	1,149,108.52	1,123,231.06
S. W. Pa. P. L.	675,945.25	756,131.52
Eureka P. L.	1,715,048.80	1,782,756.00
Buckeye P. L. (Macksburg)	426,940.19	424,216.38
Buckeye P. L. (Cleveland)	42,161.59	55,006.63
Buckeye P. L. (Lima, etc.)	5,132,654.61	4,763,213.91
Indiana P. L.	637,623.18	695,067.72
Cumberland P. L.	627,679.02	650,094.40
Southern P. L.	378,610.99	383,995.42
N. Y. Transit	753,445.09	808,998.76
Northern P. L.	547,050.82	537,565.25
Pure Oil	59,565.11	60,918.70
Emery P. L.	7,313.38	7,916.48
Paragon Ref.	16,869.68	20,811.72
Indian Ref.	99,260.00	100,463.76
Paragon Dev.	7,433.22	10,031.11
Total	12,276,709.76	12,180,418.82
Decrease	63,587.49	96,290.94

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of January and February, showing the gross stocks of the above fields:

	Jan.'28	Feb.'28
Pennsylvania	3,823,756.32	3,821,514.45
Lima	1,302,935.45	762,432.37
Kentucky	996,124.21	1,049,761.11
Mid-Continent	6,136,868.36	6,460,176.14
Illinois	67,025.42	86,534.75
Total	12,276,709.76	12,180,418.82

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1925	1926	1927	1928
Jan.	56,831	55,630	56,209	52,904
Feb.	60,606	60,394	61,298	57,002
Mar.	60,576	61,644	63,247	.....
April	63,062	63,019	60,337	.....
May	59,217	60,580	60,284	.....
June	61,270	61,131	62,757	.....
July	62,639	63,206	58,674	.....
Aug.	59,686	61,815	60,870	.....
Sept.	62,510	64,639	60,285	.....
Oct.	145,388	161,122	147,036	.....
Nov.	59,350	61,774	57,275	.....
Dec.	57,974	58,755	53,089	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1925	1926	1927	1928
Jan.	157,889	156,056	141,227	146,465
Feb.	160,863	159,488	138,534	167,368
Mar.	154,591	150,239	133,777	.....
April	151,429	152,371	140,227	.....
May	146,995	160,998	144,594	.....
June	149,467	160,257	149,773	.....
July	161,338	160,045	151,850	.....
Aug.	161,730	151,929	188,653	.....
Sept.	156,719	158,915	144,213	.....
Oct.	145,388	161,132	147,036	.....
Nov.	143,582	152,608	150,975	.....
Dec.	150,162*	136,428	144,504	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1926	1927	1928
Jan.	9,859,170	9,718,008	12,376,718
Feb.	9,579,354	10,119,162	12,180,418
Mar.	9,438,292	10,794,044	.....
April	9,895,851	11,112,296	.....
May	9,531,757	11,359,381	.....
June	9,585,904	11,493,672	.....
July	9,734,637	11,458,128	.....
Aug.	9,058,947	11,989,115	.....
Sept.	9,436,732	12,212,716	.....
Oct.	9,269,806	12,047,661	.....
Nov.	9,257,067	11,939,740	.....
Dec.	9,454,512	12,340,297	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

	Runs	Shipments	Stocks
1927—			
Jan.	2,641.54	1,470.42	14,274.84
Feb.	2,764.30	1,082.82	15,956.32
Mar.	2,587.20	1,878.56	16,664.96
April	2,334.23	1,512.65	17,986.54
May	2,708.40	539.29	20,215.72
June	2,946.29	664.40	22,497.61
July	3,152.99	1,276.61	24,374.39
Aug.	3,067.89	2,713.11	18,718.17
Sept.	3,309.56	2,656.48	19,372.25
Oct.	2,801.32	1,226.90	20,946.68
Nov.	2,746.50	2,220.53	21,472.56
Dec.	2,779.86	1,893.69	22,358.72
1928—			
Jan.	1,886.06	2,424.78	21,819.99

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, March 1	2,235,805.80
Runs from wells	546,724.01
Other receipts	179,720.59
Regular deliveries	397,352.35
Other deliveries	401,670.51

The amount of Illinois oil run by the Tidewater Pipe Co. in February was 26,885.77 bbls., and deliveries were 52,867.58 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1927—	Runs	Deliveries
February	525,821.16	476,950.71
March	727,592.94	554,947.42
April	598,225.97	444,818.49
May	728,759.40	543,192.01
June	640,975.85	532,217.78
July	613,961.30	484,902.53
August	651,276.40	529,331.31
September	619,589.49	432,212.49
October	601,099.25	405,287.53
November	606,521.14	416,185.86
December	577,321.25	397,176.07
1928—		
January	561,759.57	434,147.01
February	573,619.78	450,217.81

Tidewater Pipe Co., Ltd., also delivered in February, 251,024.23 bbls. of Oklahoma oil

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
October	20,936	4,355	47,968	14,129	14,387	101,774	.....	.....	.....	.....	.....	101,774
November	9,433	2,833	23,033	15,166	4,933	55,400	.....	.....	.....	.....	.....	55,400
December	10,742	3,033	30,258	24,387	7,065	75,484	.....	.....	.....	3,613	3,613	79,097
January	15,287	3,033	31,032	7,452	9,710	66,513	.....	.....	.....	.....	.....	66,513
February	3,588	.....	31,980	19,734	10,230	65,532	.....	.....	.....	.....	.....	65,532

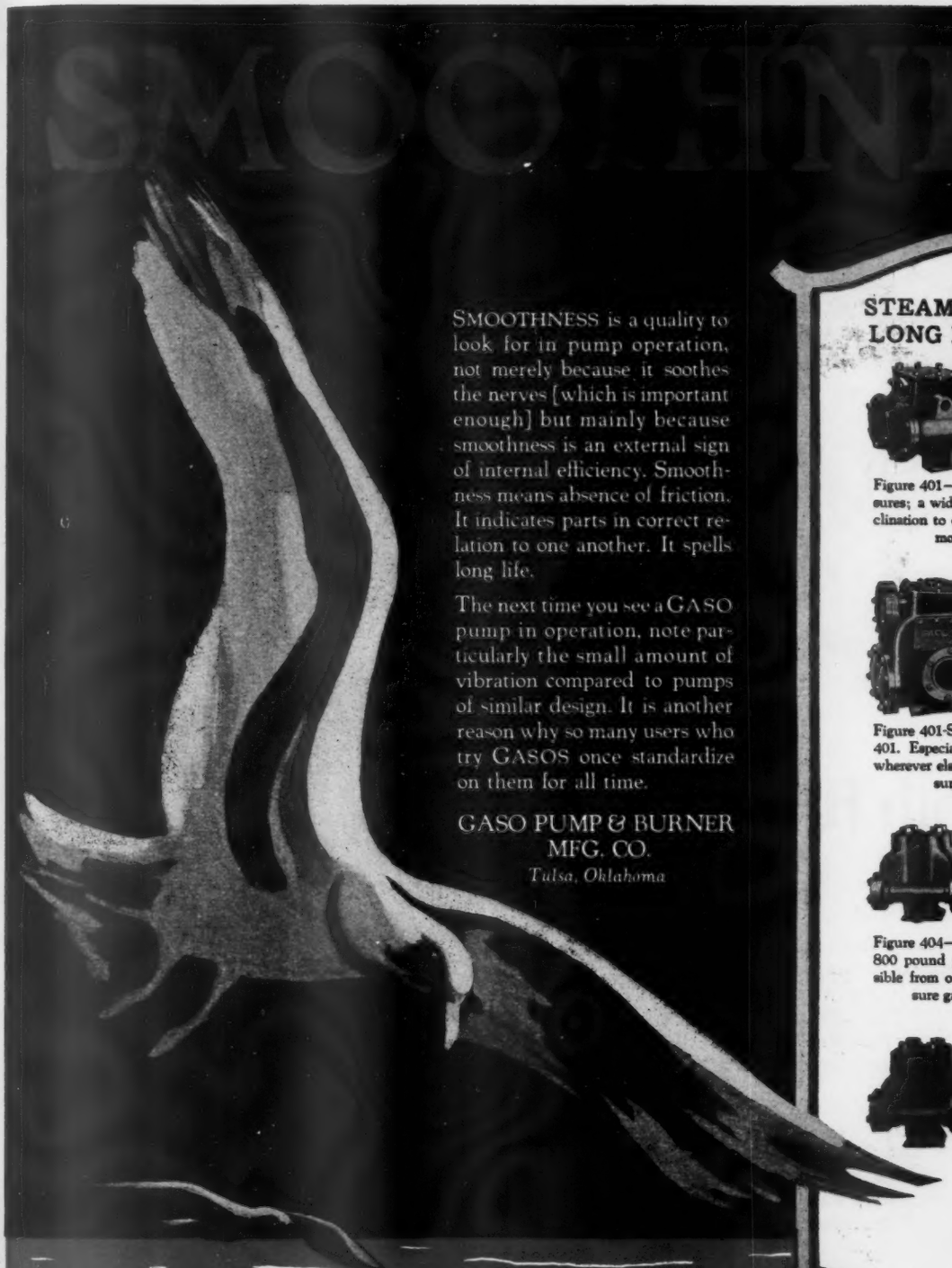
AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
October	26,064	13,097	79,355	3,838	34,097	156,451	1,618	19,323	306	1,871	23,612	180,064
November	35,233	5,032	84,533	30,100	27,067	184,967	4,000	26,500	2,000	1,667	34,167	219,133
December	39,968	2,287	78,968	19,097	29,836	170,256	2,580	15,256	839	1,226	20,000	190,256
January	15,226	4,828	107,445	27,871	29,774	184,839	5,000	22,516	..	1,355	28,871	213,710
February	6,796	5,175	108,226	29,532	28,807	178,536	7,831	22,114	6,555	2,829	39,329	217,865

GROSS PRODUCTION IN UNITED STATES FOR 12 MONTHS (REVISED)
(In Barrels)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
1927—										
March:	Month	19,835,724	22,480,921	18,179,491	3,675,143	3,853,920	2,086,108	2,684,724	3,335,800	76,131,831
	Daily average	639,862	725,191	586,435	118,553	124,320	67,294	86,604	105,100	2,455,866
April:	Month	19,493,825	22,208,130	17,755,920	3,516,930	3,378,240	2,039,550	2,671,830	3,474,000	74,538,425
	Daily average	649,794	740,271	591,864	117,231	112,608	67,985	89,061	115,800	2,484,614
May:	Month	19,506,054	23,258,463	19,489,607	3,704,314	3,493,669	1,984,651	2,682,151	3,467,000	77,585,909
	Daily average	629,228	750,273	628,697	119,494	112,699	64,021	86,521	111,839	2,502,771
June:	Month	19,181,442	22,830,330	18,360,450	3,437,580	3,365,760	1,920,180	2,634,570	3,330,000	75,060,312
	Daily average	639,381	761,011	612,015	114,586	112,192	64,006	87,819	111,000	2,621,193
July:	Month	19,319,021	26,522,546	17,580,348	3,454,082	3,406,683	2,311,019	2,678,679	3,363,300	78,635,678
	Daily average	623,194	855,566	567,108	111,422	109,893	74,549	86,409	108,484	2,536,635
August:	Month	19,279,131	26,283,350	17,682,927	3,442,240	3,242,600	2,231,202	2,489,021	3,371,000	78,221,471
	Daily average	621,907	847,850	570,417	111,040	104,600	71,974	80,291	115,194	2,523,372
September:	Month	19,064,500	24,111,660	18,322,800	3,341,340	3,032,970	2,027,070	3,268,630	3,465,000	75,633,970
	Daily average	635,483	803,722	610,760	111,378	101,099	67,569	75,621	111,774	2,521,132
October:	Month	19,448,893	24,247,053	19,200,098	3,509,169	3,117,298	2,058,889	2,258,885	3,400,000	77,240,285
	Daily average	627,384	782,163	619,358	113,199	100,555	66,416	72,867	109,677	2,491,622
November:	Month	18,516,467	23,083,380	18,628,290	3,313,650	2,906,760	1,956,960	2,234,730	3,302,500	73,942,737
	Daily average	617,216	769,446	620,943	110,455	96,892	65,232	74,491	110,083	2,464,758
December:	Month	18,938,823	22,208,417	19,840,069	3,427,174	2,962,750	1,927,148	2,400,578	3,219,900	74,924,799
	Daily average	610,930	716,400	640,000	110,554	95,576	62,166	77,438	103,868	2,416,926
1928—										
January:	Month	19,028,228	21,146,619	20,023,156	3,319,325	2,791,891	1,839,106	2,429,375	3,133,000	73,710,700
	Daily average	613,814	682,149	645,876	107,075	90,061	59,326	78,359	101,000	2,377,765
February:	Month	18,038,459	19,483,157	19,682,889	3,079,887	2,571,575	1,759,606	2,230,910	3,016,000	69,862,483
	Daily average	622,016	671,833	678,718	106,203	88,675	60,676	76,918	104,000	2,409,033
	Total 12 months	229,650,567	277,864,026	224,745,985	41,220,834	38,124,116	24,141,489	29,664,083	40,077,500	905,488,600
	Daily average	627,461	759,191	614,060	112,625	104,163	65,960	81,049	109,501	2,474,013

SMOOTHNESS



SMOOTHNESS is a quality to look for in pump operation, not merely because it soothes the nerves [which is important enough] but mainly because smoothness is an external sign of internal efficiency. Smoothness means absence of friction. It indicates parts in correct relation to one another. It spells long life.

The next time you see a GASO pump in operation, note particularly the small amount of vibration compared to pumps of similar design. It is another reason why so many users who try GASOS once standardize on them for all time.

GASO PUMP & BURNER MFG. CO.
Tulsa, Oklahoma

STEAM PUMPS WITH LONG LIFE INBUILT

Figure 401—For 175 to 800 pound pressures; a widely used model with an inclination to do the same work as much more expensive types.

Figure 401-S—An adaptation of Figure 401. Especially suited to refinery uses or wherever else a large capacity, low pressure pump is required.

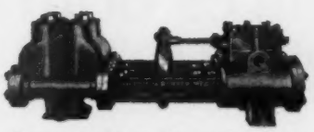


Figure 404—Valve Pot type for 500 to 800 pound pressures. Valve pots accessible from outside. Ideal for high pressure gasoline and acid work.

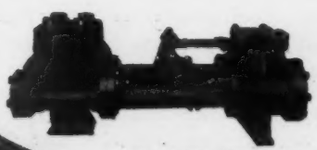
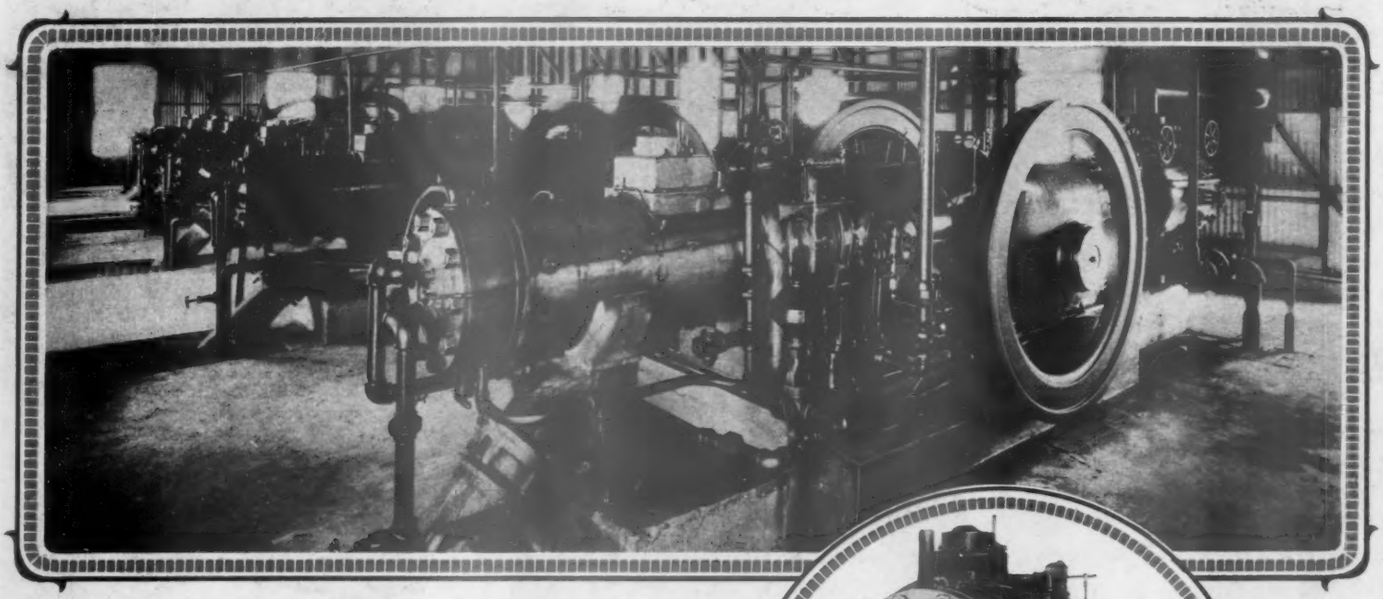
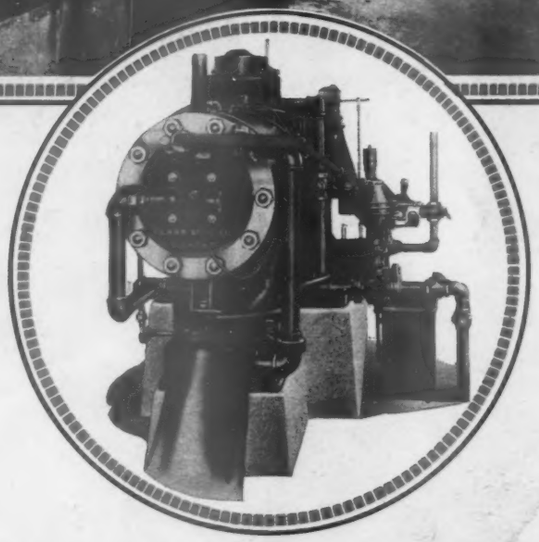


Figure 407—600 to 1,000 pound pressures. A sturdy, large capacity, high pressure steam pump, meeting a large variety of demands. Valve pot type.

GASO PUMPS
for every oil industry need

CLARK "SUPER 2"





Reduces Both FUEL and OPERATING COST-

The CLARK "Super 2" Compressor is our famous 2-cycle compressor wonderfully improved by the addition of the Clark Fuel Injector which enables it to operate on 1/3 less fuel. This compressor gives the same fuel economy as a 4-cycle—yet has the simplicity of operation and maintenance of a standard 2-cycle.

Fuel saving is effected by better mixing and higher turbulence of gas and air, and by eliminating loss of gas into the exhaust. Combustion chamber is smaller than in the 4-cycle compressor engine and reduces heat losses. The Fuel Injector adds to the cylinder, after it has been filled with air, the necessary amount of gas under pressure. This super-charging effect enables the "Super 2" to develop 10% to 15% more power for an equal sized cylinder. Burnt gases are thoroughly scavenged.

For interesting performance data on the "Super 2", address: Clark Bros. Company, Olean, N. Y. Branch and Warehouse: 125 W. First St., Tulsa. Warehouses at McCamey and Sweetwater, Texas, and Artesia, N. M. California: Smith, Booth, Usher Company, 228 S. Central Ave., Los Angeles, and 50 Fremont St., San Francisco.

Clark Bros. Co. OLEAN N. Y.

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